



# THE JOURNAL

OF THE

## Department of Agriculture

### OF SOUTH AUSTRALIA.

No. 9.

APRIL 16, 1923.

VOL. XXVI.

*Published Monthly by the Department of Agriculture.*

Edited by H. J. FINNIS.

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All communications to be addressed:

"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

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G. F. JENKINS

*Minister of Agriculture.*

## INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by C. A. LOXTON, B.V.Sc., Government Veterinary Surgeon.]

"E. R. M.," Borrika, has draught filly foal, gradually falling away in condition, is unable to get up on its legs, and has been "down" for a week.

Reply—The description given suggests that she is suffering from parasitic anaemia (worms). A careful examination of the droppings is necessary to detect some of the smaller forms, and in some cases a microscopic examination of this material for eggs is required. As the filly is very weak and anaemic it is doubtful if you will be able to treat her successfully. Give her all the nourishing and easily digested food she will take. Tartar emetic 1dr. and sulphate of iron 2dr., given daily for six days, and followed by a dose of raw linseed oil and turpentine will clear the adult parasites from the bowel. The young forms, which live in the blood vessels and beneath the lining membrane of the bowel, cannot be reached by the ordinary worm medicine.

"C. R.," Maitland, has mare, whose shoulders frequently break out in boils.

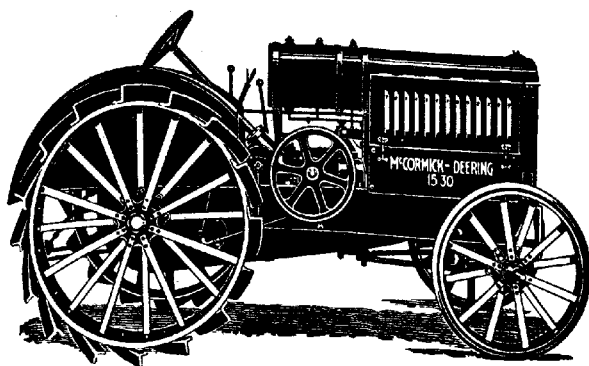
Reply—You should apply the following lotion daily:—Sulphate of zinc 4ozs., acetate of lead 4ozs., water 1 pint; mix. Shake the bottle before pouring out. Use one part of lotion to four of cold water. Apply with a swab. Attend to the cleanliness and fitting of the collar.

"A. C. K.," Cleve, has horse with inflammation of the eye following the penetration of a piece of chaff.

Reply—In all cases the first consideration is the removal of the foreign body. This can usually be effected without difficulty if you can obtain a little 5 per cent. cocaine solution; a few drops in the eye will render it insensitive to pain. The chaff can then be removed with a small pair of forceps or a fine camel hair brush. Subsequent bathing with boracic lotion is all that is necessary. If the foreign body is not removed it will set up an acute inflammation, ulceration, and probably cause considerable damage to the organ. Dry boracic powder is not advised. You should use lotion made by dissolving one tablespoonful of boracic in a quart of water. Keep the horse in a darkened shed or loose box, and bathe frequently with boracic lotion if the inflammation is acute. If, however, the only trouble now is the cloudiness or milky appearance of the eye, you can use a few drops of the following lotion daily:—Sulphate of zinc 6grs., tincture of opium 20 drops, water 2ozs.; mix.

"V. T. B.," Murray Bridge, reports four-year old horse "groggy" in the legs, and practically unable to walk. Horse is only able to drink about half a gallon of water at a time.

Reply—The symptoms you give are common to several diseases. Put him on light, easily digested food, and give him Epsom salts 1oz., saltpetre 1 teaspoonful twice daily in his drinking water or in a little mash.



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"H. M. G.," Teal Flat, has cow which has been scouring for some weeks.

Reply—This symptom is common to many diseases. She requires very careful feeding. Give her one-ounce doses of chlorodyne in half a pint of lukewarm water twice a day for a few days. Put her in a warm and comfortable shed, and keep her perfectly quiet.

"J. J. H.," Walloway, reports cows stiff in limbs and almost unable to walk.

Reply—The trouble is not likely to be infectious, and the milk is fit for use. See that the cows have an ample supply of water, and give them 1oz. of salt and bonemeal twice a day in the feed.

Secretary Blackheath Agricultural Bureau reports milking cows eating dry horse manure.

Reply—This depraved appetite is not uncommon in the cow, and is largely due to the want of a balanced ration. Treatment consists in the provision of a properly balanced ration. Read *Department of Agriculture Bulletin No. 102*. Provide salt and bonemeal at the rate of 1oz. of each twice daily in the feed.

"L. F.," Wanbi, has several ewes with white scum over the eyes.

Reply—They are suffering from a contagious inflammation of the eyes. You should separate those affected. Put them on good feed and water, and if you can dress them you will find the following lotion effective:—Sulphate of zinc 6grs., tincture of opium 20 drops, water 2ozs.; mix. Apply a few drops daily with an eye dropper.

Secretary, Agricultural Bureau, Gladstone, reports cow unable to rise, muzzle dry, and tongue protruding. Cow has been drenched with linseed oil and beer.

Reply—Do not drench her. Give the following powders:—Strychnine sulph. 12grs., pulv. sugar 2drs.; mix. Divide into 24 powders. One twice daily on the tongue. You should make an attempt every day to get her on her feet. If unable to do so, make her comfortable, and give her a good straw bed. Keep her up on her brisket, and give her a change of position from side to side occasionally. Give her as much cold water as she will drink, no gruel, and whatever food to which she is partial.

"H. W. L.," Clare, has five-year-old mare with swollen eye. The eye is closed and discharging yellow matter tinged with blood. There is also a swelling under the jaw.

Reply—You should put her on light laxative diet, and give her Epsom salts 1oz. twice daily in mash or drinking water. Apply warm disinfection lotions twice a day to the swelling round the eye. Use boracic acid 2ozs. to a gallon of water. Foment the swelling under the jaw with warm water, and watch for abscess formation in this region. The swelling round the right eye is probably due to an injury which may implicate the eye itself.

Secretary, Agricultural Bureau, Cygnet River, seeks information regarding (1) quantity of powdered salt lick that should be given to cows; (2) horse with swollen eye, discharging pus, and film over the pupil; (3) horse with swollen sheath.

Replies—(1) The salt lick may be given in the feed up to 2oz. per day, but if it has to be given in this manner it would be more economical to use coarse lake salt, such as you can obtain locally. If you require a special medicinal lick use—Common salt 100lbs., bonemeal 20lbs., sulphur 5lbs. Give 1oz. in each feed. (2) Horse with white film over pupil. Apply a few drops of the following lotion daily with an eyedropper:—Sulphate of zinc 6grs., tincture of opium 20drops, water 2ozs.; mix. (3) Gelding with swollen penis. This may be due to some local irritation, and it would be advisable to examine the part on this account, or it may be a dropsical swelling due to ill-health, debility, worms, or some other constitutional disturbance. Apply warm fomentations if there is any local cause. Put him on laxative diet, and give him Epsom salts 1oz., saltpetre 1 teaspoonful, twice daily in feed or drinking water. Put him in a small yard or enclosure where he can obtain a little exercise.

"B. Bros.," Borrika, have foal four months old with a swelling on the stifle.

Reply—Apply the following:—Tincture of iodine and Stockholm tar equal parts; mix. Apply with a brush daily. If the part becomes tender, allow a longer interval between the applications.

## AGRICULTURAL EXPERIMENTS AT MOUNT BARKER.

By W. J. SPAFFORD (Superintendent of Experimental Work).

[An Address delivered before the Mount Barker Branch of the Agricultural Bureau.]

As you must realise, agricultural experimental work is fairly expensive, and unless full publicity is given to the results obtained from such work, much money and valuable time is wasted. Of course, the testing of various agricultural practices in different districts possessed of distinct climatic conditions is very useful to agricultural teachers, and allows departmental officers to keep more or less up to date, but in our present state of development we look for more marked and more rapid results from such trials, and feel certain that the only way of attaining these is to keep the producers living in somewhat similar conditions to those obtaining where this class of work is being done, in close touch with the experimental plots, and with the results secured from the experiments. It is with this object that I come before you this evening, and now that we have the returns of several years' work to submit, these results should prove interesting and possibly useful.

Before touching on the results of the Mount Barker experimental plots, I would like to point out to you the fact that your Branch of the Agricultural Bureau is very fortunate in having such men as Messrs. Pope Bros. to conduct these experiments for you. These farmers are noted by all who know them as two of the best agriculturists in the State, and I can assure you that from a departmental point of view they are everything that could be desired, and their work in connection with these experimental plots has been of the very best.

### BRIEF HISTORY OF EXPERIMENTAL PLOTS AT MOUNT BARKER.

In 1906 arrangements were made for Messrs. Pope Bros. to conduct experiments with grasses and clovers on small plots, and these trials were continued until 1908, in which year tests with wheats for hay were commenced. In 1910 manurial tests with potatoes were laid down, and were conducted from that year until 1916, and these were followed by a series of rotation-of-crops experiments, combined with manurial tests on potatoes, which have been under way since 1917.

### THE EXISTING EXPERIMENTAL PLOTS AT MOUNT BARKER.

After hearing many farmers working in the cultivated districts of the Adelaide Hills discuss the main requirements of their holdings, and after conference with Messrs. Pope Bros., we considered that the

outstanding need of producers in the above-mentioned districts was the proving of a rotation of crops suited to the natural conditions obtaining. The discovery, and putting into practice, of an economically correct rotation of crops has perhaps played a greater part towards success in most "good" agricultural districts in the countries of the world which have been farmed for long periods of time, than has anything else, and it is only reasonable to suppose that the same thing will apply in those of our own areas blessed with good natural conditions. Further, the need for some improvement in this direction has been evident to most of the progressive farmers of the "Hills" districts for some considerable time, and it is not at all unusual to hear farmers say something like this:—"What I want is another rotation crop, because alternating hay and peas is not sufficient for my land." It is with the object of proving a four-course rotation of crops, economically suitable for the "Hills" districts, that the main work now being done at Mount Barker was commenced, and is being continued. At the same time, and in conjunction with the rotation-of-crops experiments, a series of manurial plots with potatoes is also being conducted.

#### THE ROTATION OF CROPS IN OPERATION.

When arranging the rotation of crops to be undertaken, one of the main considerations was, that only those crops would be grown which could be readily sold on our markets, but as such a very large assortment of saleable crops can be profitably grown in most of the "Hills" districts, a great many workable rotations could have been chosen, and we finally decided, in agreement with Messrs. Pope Bros., that a four-course rotation of crops, containing peas, potatoes, rape, and wheat hay, promised to be one of the most suitable for the present time. The theoretically correct way to have arranged these crops would have been to grow the cruciferous fodder crop (rape) before the root crop (potatoes), then the leguminous crop (peas), and finally the cereal (wheat) after the peas, but it was found in practice that the potato crop could not be dug until winter, and because the land was so loose after the cultivations given to the potato crop, it remained wet and boggy too long to admit of seeding the pea crop early enough in the season, and so, the consequence was that the following order of cropping had to be adopted:—

Plot.	1917.	1918.	1919.	1920.	1921.
1	Peas	Potatoes	Rape	Wheat	Peas
2	Potatoes	Kale	Wheat	Peas	Potatoes
3	Kale	Wheat	Peas	Potatoes	Rape
4	Wheat	Peas	Potatoes	Rape	Wheat

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Each plot in the rotation contains 5 acres of cropping area, so that all work done is absolutely similar to that given to ordinary farming lands in so far as type of implement, &c., is concerned, and further, such large plots enable correct grazing records to be secured.

#### THE CROPS IN THE MOUNT BARKER ROTATION.

Although the plot carrying the potato crop is each year subdivided for manurial tests, the average yield from the whole plot is used every season in the records, and details of these manurial tests will not be considered until the rotation crops have been dealt with.

*Peas.*—For the five years under review Early Dun field peas have been seeded at the rate of 3bush. of seed with 1cwt. superphosphat per acre, after the plot had been dressed with 10cwts. lime per acre and this crop has given the following results:—

1917 . . .	28bush. 10lbs. per acre.
1918 . . .	15bush. 15lbs. per acre.
1919 . . .	10bush. 14lbs. per acre.
1920 . . .	Grazed; 1.49 sheep per acre per year.
1921 . . .	22bush. per acre.

Total for five years—75bush. 39lbs. per acre and 1.49 sheep per acre per year.

Average yield—15bush. 8lbs. peas and 0.30 sheep per acre per year.

\* Crop affected by pea spot (*Ascochyta pist*), necessitating grazing.

*Potatoes.*—In each season Snowflake potatoes were planted about Christmastime with various manures, details of which are set out later on when dealing with these manurial experiments. Before preparing the land for this crop, much good grazing was got from the plot, by lightly cultivating the land after the pea crop was harvested, and then drilling in oats or a mixture of oats and barley. The potato crop has given the following yields:—

1917-18 . . .	5 tons 6cwts. 68lbs. per acre.
1918-19 . . .	6 tons 18cwts. 100lbs. per acre.
1919-20 . . .	4 tons 3cwts. 109lbs. per acre.
1920-21 . . .	7 tons 11cwts. 44lbs. per acre.
1921-22 . . .	5 tons 0cwt. 96lbs. per acre.

Total for five years—29 tons 1cwt. 81lbs. per acre.

Average yield—5 tons 16cwts. 39lbs. per acre per year.

*Rape.*—For the first two seasons Thousand-Headed kale was used in the plot to be grazed, but Dwarf Essex rape was found to be more suited to the conditions prevailing, so the crop was changed, without of course, altering the original intention of growing a cruciferous grazing crop. When kale was used, 2lbs. of seed per acre were drilled in, but for rape 5lbs. of seed were necessary, and in all years the crop

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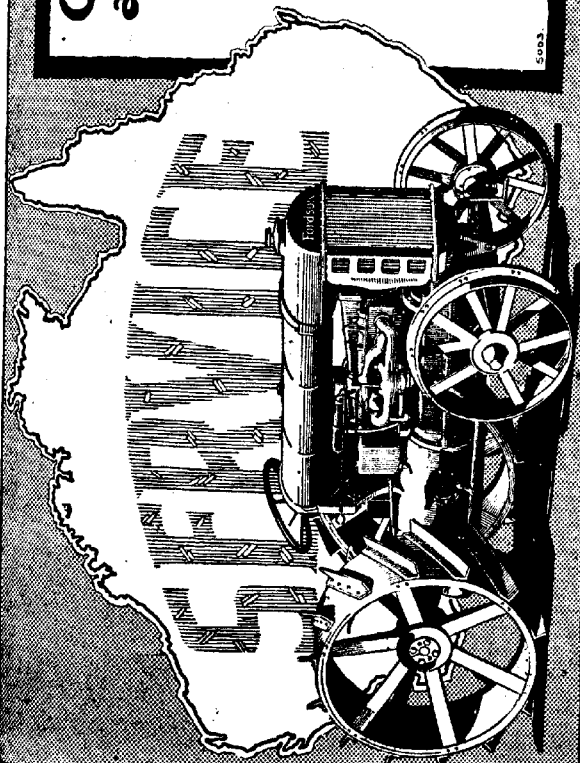
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was dressed with 1cwt. bonedust per acre. The grazing returns from this crop, including the grazing between digging potatoes and seeding to rape, have been:—

1917 . . . .	0.93 sheep per acre per year.
1918 . . . .	2.69 sheep per acre per year.
1919 . . . .	2.35 sheep per acre per year.
1920 . . . .	2.02 sheep per acre per year.
1921 . . . .	3.51 sheep per acre per year.

Total for five years—11.50 sheep per acre.

Average grazing—2.30 sheep per acre per year.

*Wheaten Hay.*—Depending on the seeding season, Crossbred 53 or Leak's Rustproof wheat has been drilled in at the rate of  $1\frac{1}{2}$  bush. with 2cwts. superphosphate per acre, and the crops have given the following yields of hay per acre:—

1917 . . . .	1 ton 2cwts. 69lbs. per acre.
1918 . . . .	2 tons 17cwts. per acre.
1919 . . . .	2 tons 9cwts. per acre.
1920 . . . .	2 tons 5cwts. 80lbs. per acre.
1921 . . . .	2 tons 10cwts. 101lbs. per acre.

Total for five years—11 tons 5cwts. 26lbs.

Average yield—2 tons 5cwts. 5lbs.

*Grazing other than Rape.*—Besides the cruciferous grazing crops, there has always been good grazing produced by seeding the plot soon after the pea crop has been harvested with oats or a mixture of oats and barley, at the rate of  $1\frac{1}{2}$  bush. of seed per acre. The hay stubble has also produced grazing each year, and in two seasons the hay crop grew so rank that it had to be fed off. To date these grazings have averaged:—

Grazing between peas and potatoes—1.60 sheep per acre per year.

Grazing hay crops and stubbles—1.04 sheep per acre per year.

#### SUMMARY OF MOUNT BARKER ROTATION, 1917-21.

For the five seasons under review the crops in the rotation being conducted at Mount Barker have produced:—

	Per acre for five years.	Per acre per year.
Peas . . . . .	75bush. 39lbs., 1.49 sheep	15bush. 80bs., 0.30 sheep
Potatoes . . . . .	29 tons 1cwt. 81lbs.	5 tons 16cwts. 39lbs.
Rape . . . . .	11.50 sheep	2.30 sheep
Wheaten hay . . . .	11 tons 5cwts. 26lbs.	2 tons 5cwts. 5lbs.
After peas . . . . .	8.00 sheep	1.60 sheep
Hay crop and stubble . . . . .	5.20 sheep	1.04 sheep

# FINANCIAL ASPECT OF THE CROPS.

*Peas.*—The average price of peas in Adelaide was 6s. 10d. per bushel for the period 1917 to 1921, so if we take 6s. 6d. per bushel as the price in Mount Barker, and allow a sheep to be worth 18s. per year and take the cost of producing the crop to be £3 per acre, we arrive at the following:—

75bush. 39lbs. peas, at 6s. 6d. per bushel . . . . .	£24 11 9
149 sheep, at 18s. per sheep . . . . .	1 6 10
	<hr/>
Less five years, at £3 per acre . . . . .	£25 18 7
	15 0 0
	<hr/>
Five years' pea crop . . . . .	£10 18 7
	<hr/>
Profit per acre per year . . . . .	£2 3 9

*Potatoes.*—In Adelaide the average price of potatoes for the period 1917 to 1921 was £8 12s. 10d. per ton, so allowing £7 10s. to be the Mount Barker price, and taking £12 per acre as the cost of production, this crop has been worth:—

29 tons 1cwt. 81lbs. potatoes, at £7 10s. per ton . .	£218 2 10
Less five years at £12 per acre . . . . .	60 0 0
	<hr/>
Five years of potato crop . . . . .	£158 2 10
	<hr/>
Profit per acre per year . . . . .	£31 12 7

*Rape.*—Taking the value of a sheep on a Mount Barker farm at 18s. per year, and the cost of producing a crop of rape at 25s. per acre, this crop will have earned:—

11.50 sheep, at 18s. per sheep . . . . .	£10 7 0
Less five years, at 25s. per acre . . . . .	6 5 0
	<hr/>
Five years of rape crops . . . . .	£4 2 0
	<hr/>
Profit per acre per year . . . . .	£0 16 5

*Wheaten Hay.*—The average price of hay in Adelaide for the period 1917 to 1921 was £3 14s. per ton, so allowing £3 per ton as the price in Mount Barker, and taking 55s. per acre as the cost of production, the hay crops have been worth:—

11 tons 5cwt. 26lbs., at £3 per ton . . . . .	£33 15 8
Less five years, at 55s. per acre . . . . .	13 15 0
	<hr/>
Five years' hay crops . . . . .	£20 0 8
	<hr/>
Profit per acre per year . . . . .	£4 0 2

*Profit other than Rape.*—If we again take the value of a sheep at Mount Barker at 18s. per year, and allow 7s. 6d. per acre to seed oats or oats and barley, we get for extra grazing:—

8.00 sheep after peas, at 18s. . . . .	£7 4 0
5.20 sheep on wheat crop and stubble, at 18s. . .	4 13 7
	<hr/>
	£11 17 7
Less cost seeding five years, at 7s. 6d. per acre . .	1 17 6
	<hr/>
Five years, extra grazing . . . . .	£10 0 1
	<hr/>
Profit per acre per year . . . . .	£2 0 0

#### PROFITS RECEIVED ON WHOLE ROTATION.

A summary of estimated profits, as shown above, for the five-year period 1917 to 1921, will be:—

Peas . . . . .	£2 3 9	annual profit per acre
Potatoes . . . . .	31 12 7	annual profit per acre
Rape . . . . .	0 16 5	annual profit per acre
Wheaten hay . . . . .	4 0 2	annual profit per acre
Other grazing . . . . .	2 0 0	annual profit per acre
Whole rotation . . . .	£10 3 3	annual profit per acre

The figures set out in the above statements consist of actual yields and actual grazing returns, but *costs* are nothing but guesses, and unfortunately they can never be correctly stated, because they vary on every separate holding, with every individual, and in every season, and they are only submitted as possibly being a more interesting way to present what would otherwise be a mass of figures hard to follow. The placing of costs of production, values received for crops etc., rests wholly with every individual producer, and the figures given will possibly be a guide in that direction.

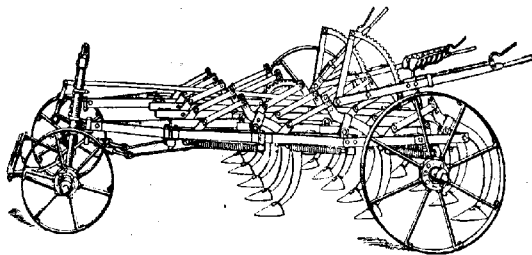
#### MANURIAL EXPERIMENTS WITH POTATOES.

Each season that one of the rotation plots was cropped with potatoes it was subdivided into five smaller plots, and a series of manurial tests were carried out. These experiments were really a continuation of work done by Messrs. Pope Bros. during the seasons

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1912-13 to 1915-16, over which period the tests with potatoes gave the following results:—

*Manurial Experiments with Potatoes, Mount Barker, 1912 to 1916.*

Manure per acre.	Average Yield per Acre Four Years. 1912-13 to 1915-16 tons cwt. lbs.		
No manure . . . . .	2	16	84
15 tons farmyard manure, 2cwt. super. . . . .	4	19	28
15 tons farmyard manure . . . . .	4	10	28
4cwt. super., 2cwt. dried blood . . . . .	4	5	56
4cwt. super, 2cwt. dried blood, 1cwt. sulph. potash . . . . .	4	7	0
8cwt. super . . . . .	4	9	0
8cwt. basic slag . . . . .	3	10	84

On these returns, and particularly as we did not wish to have so many plots that the areas would be reduced below 1 acre each, it was decided to eliminate the two most unprofitable ones, and the plots receiving sulphate of potash and basic slag were not continued in the tests commenced in 1917.

Although these experiments were carried out during each of the past five years, the results are only useful for four seasons, as owing to an unfortunate accident, not in any way connected with the manuring tests, one plot failed to germinate, so no comparison for that year could be made. The behavior of these manurial tests for the seasons 1916-17 to 1919-20 are set out below:—

*Potato Manurial Experiments, Mount Barker, 1917-18 to 1920-21.*

	1917-18.		1918-19.		1919-20.		1920-21.		Means 1917-18 to 1920-21.
	T.	C. L.	T.	C. L.	T.	C. L.	T.	C. L.	T. C. L.
No manure. . . . .	3	9 0	5	2 56	0	19 28	3	12 0	3 5 77
15 tons farmyard manure, 2cwt. super	6	7 56	7	4 28	4	2 56	8	5 28	6 9 88
15 tons farmyard manure, 4cwt. super	6	2 84	7	5 84	4	4 0	8	2 84	6 8 91
2cwt. dried blood . . . .	4	19 0	7	5 84	4	14 56	8	2 0	6 5 35
8cwt. super . . . . .	4	16 0	6	18 0	5	7 28	7	15 28	6 4 14
Means . . . . .	5	6 68	6	18 100	4	3 109	7	11 44	6 0 2

The average yields received from these manurial tests with potatoes show very clearly quite considerable increases from the use of fertilisers in the Mount Barker district, and as all other operations

were similar for all the plots, these increased yields are wholly due to the manures. These differences are perhaps brought out in a clearer light, when a money value is put on the produce obtained, and although values and costs can only be approximately stated, the next table will possibly be a guide for producers to apply their own known costs and money returns:—

*Increases in Potato Yields Due to Fertilisers.*

	Yield per acre.	Increase over no Manure.	Value of Increase.	
			Gross at £s	Nett Value
	T. C. L.	T. C. L.	per ton.*	of Increase.†
No manure . . . . .	3 5 77	—	—	—
15 tons farmyard manure, 2cwts. super . . . . .	6 9 98	3 4 21	£25 13 6	£16 1 6
15 tons farmyard manure . 4cwts. super, 2cwts. dried blood . . . . .	6 8 91	3 3 14	£25 5 0	£16 5 0
6cwts. super . . . . .	6 5 35	2 19 70	£23 17 0	£21 1 0
2cwts. super . . . . .	6 4 14	2 18 49	£23 7 6	£20 19 6
* Average price of potatoes in Adelaide over period 1917 to 1920 was £9 3s. 8d.				

† Values allowed for manures:—

Superphosphate, 6s. per cwt.  
Dried blood, 16s. per cwt.  
Farmyard manure, 12s. per ton.

*OTHER TESTS WITH POTATOES AT MOUNT BARKER.*

Besides the tests already set out, Messrs. Pope Bros. have always conducted some other experiments with potatoes on comparatively small plots. These plots have usually consisted of five rows of potatoes 11 chains 36 links in length, and although on some occasions the plots have been slightly smaller, all yields are shown for this area, so that a correct comparison can be made.

*Potato Experiments on Small Plots at Mount Barker.*

Experiment.	Yield per plot (5 rows of 1,136 links). T. C. L.	Years.	Period.
Small setts (1½cwts. seed) . . . . .	1 2 8		1917-18 to
Large setts (6cwts. seed) . . . . .	1 7 53	5	1921-22
Immature setts . . . . .	1 2 21		1917-18 to
Mature setts . . . . .	0 18 66	2	1918-19
Victorian setts . . . . .	1 12 103		1920-21 to
Local setts . . . . .	1 11 5	2	1921-22



## SUMMARY OF EXPERIMENTAL WORK AT MOUNT BARKER.

### ROTATION-OF-CROPS EXPERIMENT.

(1) Following on several years' agricultural experimental work at Mount Barker, in 1917 a four-course rotation-of-crop experiment on five-acre plots was inaugurated, using a leguminous crop, a root crop, a cruciferous fodder crop, and a cereal.

(2) For the "Hills" districts generally, it was considered that peas, potatoes, kale, and wheat for hay would prove most useful.

(3) Local conditions soon showed that rape was more suitable than kale as the cruciferous crop, and that the order of cropping would of necessity have to be:—Peas followed by potatoes, potatoes followed by rape, and finally wheat after the rape.

(4) This rotation-of-crops experiment has proved itself quite practicable and easily conducted in these conditions, and is quite successful, because all of the crops being grown are proving directly profitable.

(5) During the five-year period, 1917 to 1921, these rotation plots have actually produced per acre:—75bush. 39lbs. of peas; 29 tons 1cwt. 81lbs. of potatoes; and 11 tons 5cwt. 26lbs. of hay, and have carried sheep at the rate of 26.19 sheep per year on the 20 acres comprising the plots.

(6) The average returns per acre per year have been:—Peas. 15bush. 8lbs., plus 0.30 sheep; potatoes, 5 tons 16cwt. 40lbs.; hay, 2 tons 5cwt. 5lbs.; grazing (other than 1 pea crop fed off), 1.24 sheep per acre per year on the whole block, of which the rape plot averaged 2.30 sheep per acre per year.

(7) For the five-year period, if peas were worth 6s. 6d. per bushel at Mount Barker, a farmer's sheep 18s. per year, and the cost of producing a crop of peas was £3 per acre, the pea crop showed a profit of £2 3s. 9d. per acre per year.

(8) Allowing potatoes to be worth £7 10s. a ton at Mount Barker, and £12 per acre as the cost of production, this crop shows a profit of £31 12s. 7d. per acre per year.

(9) Taking the value of hay at £3 per ton at Mount Barker, and the cost of production at 55s. per acre, a profit of £4 0s. 2d. per acre per year is shown for the hay crops.

(10) If a farmer's sheep is worth 18s. per year; (a) rape at a cost of 25s. per acre to grow, gave grazing worth 16s. 5d. per acre per year; (b) oats or a mixture of oats and barley at a cost of 7s. 6d. per acre provided grazing worth £1 1s. 4d. per year; (c) the grazing of the cereal crop and stubble was worth 18s. 9d. per acre per year.

(11) At the above-mentioned values and costs the whole rotation gave a profit of £10 3s. 3d. per acre per year.

(12) Owing to an unfortunate outbreak of pea spot (*Ascochyta pisi*) in 1920, the crop of peas was a total failure in so far as grain production was concerned, and the growth was so reduced that the plot only carried sheep at the rate of 1.49 sheep per acre. This trouble is liable to occur in wet seasons, so could not be taken as an accident which should have been avoided, and as a consequence this failure had to be included in the averages. Without this happening the average yield of peas would, of course, have been considerably higher.

(13) The rotation of crops as practised at these experimental plots could, with much advantage, be utilised by most farmers in the "Hills" district where the rainfall is sufficient for the potato crop. The excuse so often heard, that the soils are not good enough, does not carry much weight in most cases, because the land where these plots are situated is by no means some of the best, and success is largely due to good cultivation and adequate manuring.

# CATERPILLAR

## TRACTORS.

Agery, September 9th, 1922.

Messrs. Vrai Limited, Torrensvillc.

Dear Sirs,

We have tested the T-35 "Caterpillar" here, and find we can plough 14½ acres 3in. deep on hard soil, on a fuel consumption of 12galls. of kerosene and ½ pint of petrol.

(Signed) H. CADD & SONS,  
Per H. H. Cadd.

This test was run for a period of 5 hours 27 minutes on kerosene, and gave a result of 1s. 10d. per acre for fuel, oil, and grease.

**THERE IS ONLY ONE "CATERPILLAR."  
HOLT BUILDS IT.**

There is a "Caterpillar" model for every job. May we send you particulars?  
VRAI LIMITED, TORRENSVILLE, sole Agents.

## MANURIAL EXPERIMENTS WITH POTATOES.

(14) The manurial experiments clearly show that the soils of the "Hills" districts demand fertilisers, if good crops of potatoes are to be grown.

(15) Applications of farmyard manure, particularly if superphosphate is also used, give the greatest increase over the "no manure" plot. Unfortunately, unless much farmyard manure is stored on the farm, it is an extremely difficult material to secure in quantity, and comparatively heavy dressings are required for the potato crop.

(16) An application of 4cwts. superphosphate and 2cwts. dried blood gives the greatest profit, over and above the non-fertilised plot.

(17) The use of 8cwts. superphosphate per acre as a manurial dressing gives a profit nearly equal to that received from the superphosphate and dried blood.

(18) Under present conditions, in the "Hills" districts it appears that an application of superphosphate and dried blood is the most suitable for the potato crop, at all events on soils not well supplied with organic matter, as applies to much of the land not actually at the bottom of the valleys.

(19) Under a system of farming, such as is carried on in the rotation-of-crops experiments at Messrs. Pope Bros., where there is a leguminous crop, and a good deal of grazing, it will possibly be unnecessary to apply a nitrogenous fertiliser to the potato crop after the land has been under the rotation for a few years. If this is so a dressing of 6cwts. to 10cwts. of superphosphate per acre should be all that is required.

## OTHER POTATO EXPERIMENTS.

(20) Although "large" setts give a greater yield of potatoes at Mount Barker, such a big increase in the amount of "seed" is necessary that it is very doubtful if the use of this kind of sett is warranted, as against the usual good, sound "small" sett.

(21) For the two years that the test was made, immature "seed" certainly gave a marked increase over what was received from "mature" seed."

(22) Very little difference was noted in the returns secured from Victorian grown "seed" and "seed" saved by Messrs. Pope Bros. from their own crops, but these tests were only made over two seasons, so are by no means conclusive.

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**MINERAL SUPER**  
**MUNIFICENT HARVESTS**

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**The Adelaide Chemical & Fertilizer Co., Ltd.,**  
**CURRIE STREET.**

## BOOBOROWIE EXPERIMENTAL FARM HARVEST REPORT.

[By E. A. BRISTOW, Manager.]

This farm is situated 120 miles north of Adelaide, and contains 1,344 acres, and has an altitude of 1,200ft. to 2,000ft. It consists of two blocks—one, the old North Booborowie homestead, is "high" land running to the highest point in Brown's Hill Range, and containing 1,046 acres; the other block (No. 478), situated two miles from the homestead, contains 298 acres of comparatively level land, which in times of heavy rains is flooded by water from the Tumela Creek. This farm is situated in the centre of a very good district, which contains land suitable for (1) cereal growing, (2) lucerne growing without irrigation, and (3) some really good grazing land not arable. Typical cereal-growing land and grazing land constitute this farm. Unfortunately, it includes none of the first class lucerne-growing land of which many thousands of acres are to be found in the district, although in the growing and handling of this crop there is urgent need for experimental investigation.

## THE SEASON 1922.

To the end of March 2.47in. of rain were registered, and during April an additional 1.69 points of rain fell in small precipitations on very dry land, therefore being of little value. The total rain, however, to the end of April was 4.16in. May proved to be very wet, 4.14in. of rain having fallen on 14 days. Good rains followed to the end of August, as follows:—1.58in. for June, 3.31in. for July, 2.50in. for August. From the first of September to the end of November the weather was characterised by scanty rains, which had a detrimental effect upon the crops. Two inches and 24 points of rain fell during December, which bleached the grain and hindered harvesting operations.

*Rainfall Distribution at Booborowie, 1900-1921.*

	Means. 1900- 1917.	1918.	1919.	1920.	1921.	1922.	Means. 1900- 1922.
	In.	In.	In.	In.	In.	In.	In.
January .....	0.49	0.59	0.23	0.22	1.25	1.23	0.54
February .....	0.46	0.52	2.56	—	1.12	1.09	0.59
March .....	0.83	0.62	0.05	0.51	1.75	0.15	0.78
April .....	0.88	1.40	1.35	0.79	—	1.69	0.99
May .....	1.61	2.10	2.42	0.96	2.47	4.14	1.78
June .....	2.53	2.06	2.25	4.27	2.92	1.58	2.55
July .....	2.02	1.70	1.36	1.88	2.46	3.31	2.05
August .....	2.07	2.99	2.01	3.52	2.38	2.50	2.21
September .....	2.20	0.39	2.09	2.57	2.79	1.63	2.13
October .....	1.72	1.21	1.44	2.11	1.60	0.70	1.65
November .....	1.12	0.13	0.85	3.47	0.84	0.06	1.11
December .....	0.97	0.16	1.78	1.92	0.92	2.24	1.07
Total .....	17.00	13.87	18.39	22.22	20.50	20.32	17.45
"Useful" rainfall (April-November)	14.25	11.98	13.77	19.57	15.46	15.61	14.47

The total rainfall for the year must be considered good, as it is above the average, and plenty of rain fell to produce quite fair crops. The "useful" rain, 15.61in., is also above the average.

*Distribution of "Useful" Rainfall, Booborowie, 1900-1922.*

	1922. Inches.	Means. 1900-22. Inches.
Seeding rains (April-May) .. . . .	5.83	2.77
Winter rains (June-July) .. . . .	4.89	4.60
Spring rains (August-October) .. . . .	4.83	5.99
Early summer rains (November) .. . . .	0.06	1.11
	15.61	14.47

CROPS.

The continuous rain during May made seeding operations rather difficult, but, on the other hand, the good rains promoted the germination of most of the weeds, and so led to "clean" crops.

*Ensilage Crop.*—Field No. 13, which was fallowed in 1920, and carried a wheat crop in 1921, was ploughed during April 10th to 12th, 1922, was harrowed on May 5th, cultivated during 5th to 11th, also drilled from 5th to 11th with 70lbs. of Calcutta oats and 50lbs. of Federation wheat, in addition to 1cwt. superphosphate per acre. Harrowed on May 15th. This crop made but little growth. The whole of the field was cut, and the 17.89 acres, when chaffed and ensiled, yielded 64 tons of ensilage. This field was not sufficient to fill the silo, which necessitated cutting headlands in Field No. 14, where 1.86 acres yielded 11 tons of ensilage. The 19.75 acres cut for its purpose produced 75 tons, averaging 3 tons 15cwt. 106lbs. per acre.

*Hay Crops.*—The area devoted to cereals for hay was 88.38 acres. Some stubble land was sown with oats. Field No. 6 was sown with Calcutta oats, seeded at the rate of 80lbs. and 1cwt. of super per acre. Field No. 15 was sown with 75lbs. of graded seed of Crossbred 53 wheat and 2cwt. of super per acre on fallow land. Field No. 24 was sown with 75lbs. of seed and 2cwt. of super per acre on fallow land. The yields of hay secured from the various fields are set out in the next table:—

*Hay Yields, Booborowie, 1922.*

Kind.	Field Grown.	Area. Acres.	Total Yield.			Yield per Acre.		
	No.		T.	C.	L.	T.	C.	L.
Wheat headlands' . . . . .	24	47.64	80	0	0	1	13	82
Calcutta oats . . . . .	6	19.19	45	0	0	2	6	101
Wheat crop . . . . .	15	12.09	26	0	0	2	3	1
Wheat crop . . . . .	Plot 9A	2.19	5	0	0	2	5	74
Wheat headlands . . . . .	Exp. plots	2.28	3	0	0	1	6	35
Barley . . . . .	25	2.93	6	0	0	2	0	107
Wheat headlands . . . . .	7	2.06	3	0	0	1	9	14
Farm average . . . . .		88.38	168	0	0	1	18	2

The yields obtained may be considered fair, after the dry, hot spring, which prevented the crops growing to a normal height.

*Hay Returns, Booborowie, 1912-1922.*

Year.	Total Rainfall.	"Useful" Rainfall.	Area. Acres.	Total Yield.			Yield per Acre.
	In.	In.		T.	C.	L.	
1912 . . . . .	15.50	13.20	70.00	132	5	0	1 18 88
1913 . . . . .	15.07	10.88	76.00	109	14	0	1 8 97
1914 . . . . .	9.76	7.79	—	Failure			—
1915 . . . . .	17.14	15.95	52.27	144	15	0	2 15 43
1916 . . . . .	22.41	20.28	37.93	109	14	0	2 17 94
1917 . . . . .	26.70	21.02	58.43	198	19	0	3 8 11
1918 . . . . .	13.87	11.98	51.41	107	0	0	2 1 70
1919 . . . . .	18.39	13.77	75.75	117	0	0	1 10 106
1920 . . . . .	22.22	19.57	75.64	225	0	0	2 19 55
1921 . . . . .	20.50	15.46	47.41	98	0	0	2 1 26
1922 . . . . .	20.32	15.61	88.38	168	0	0	1 18 2
Means . . . . .	18.35	15.05	—	—	—	—	2 1 95

*Oat Crops.*—Only a small area was seeded to oats for grain, and all oats were sown on stubble land. Field 9B was fallowed in 1919, and carried a wheat crop in 1920; was sown during June, 1921, with Calcutta oats, and after the land was cultivated between May 5th and 15th, 1922, it was drilled on May 16th with 80lbs. Calcutta oats and 1cwt. super per acre.

Field 25 was fallowed 1920, and sown with wheat 1921, ploughed between June 7th and 15th, 1922, and sown with Scotch Grey and Algerian oats at the rate of 80lbs. of seed and 1cwt. super per acre. The grain received from the oat crops is shown in the table below, with the total and average return for the season:—

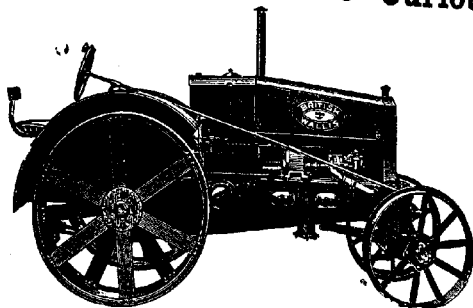
*Oat Yields, Booborowie, 1922.*

Variety.	Field Grown	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Algerian . . . . .	No. 25	4.26	103 15	24 11
Scotch Grey . . . . .	No. 25	5.50	129 35	23 25
Calcutta . . . . .	No. 9B	9.72	224 13	23 4
Scotch Grey . . . . .	Exp. plots	3.41	121 23	35 26
Farm average . . . . .	—	22.89	579 6	25 12

*Oat Returns, Booborowie, 1913-1922.*

Year.	Total Rainfall.	"Useful" Rainfall.	Area. Acres.	Total Yield.		Yield per Acre.
	In.	In.		Bush. lbs.	Bush. lbs.	
1913 . . . . .	15.07	10.86	54.00	1,394	13	25 11
1914 . . . . .	9.76	7.79	—	Failure		—
1915 . . . . .	17.14	15.95	75.47	2,410	20	31 20
1916 . . . . .	22.41	20.28	4.23	138	33	32 3
1917 . . . . .	26.70	21.02	4.68	231	25	49 20
1918 . . . . .	13.87	11.98	31.93	863	27	27 1
1919 . . . . .	18.39	13.77	22.40	451	18	20 6
1920 . . . . .	22.22	19.57	19.24	843	20	43 30
1921 . . . . .	20.50	15.46	18.72	445	19	23 22
1922 . . . . .	20.32	15.61	22.89	579	6	25 12
Means . . . . .	18.64	15.23	—	—	—	28 3

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The "BRITISH WALLIS" has proved itself highly satisfactory under Australian conditions for agricultural work, including harrowing, cultivating, turning back fallow, ploughing, harvesting, and hauling.

Mr. C. W. HILL, of Balaklava, has just reported that he pulled a WAGON LOADED WITH 50 BAGS OF WHEAT, 10 BAGS OF OATS, ANVIL, BLOWER, AND VICE, SET OF HARROWS WITH 10 LEAVES AND WHEELS, WITH 81 T. SUNSHINE HARVESTER FASTENED BEHIND, over an unmade road, a distance of 24 miles in an hour and a quarter less time than it took to do the trip with a team of eight good horses. The wheels of the tractor were not fitted with grips when doing this performance.

It WILL BE INTERESTING to readers of the *Journal* to know that Mr. J. C. Brown, who wrote the article on "Tractor versus Horse" which appeared in the *Advertiser* on March 13th, and in the *Country News* on March 17th, came to Adelaide with his two sons, and through the courtesy of the importers, saw some of the Tractors at work, and DECIDED BY PLACING AN ORDER FOR A "BRITISH WALLIS" Tractor.

Sole Agents for the "British Wallis" and all RUSTON & HORNSBY'S Specialties, such as Cold-starting Oil, Petrol, Petrol-Kero, and Suction Gas Engines and Plants.

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Only two varieties of oats have been grown continuously for the past few years, and the yields under these conditions since 1916 are set out in the next table:—

*Oats Varieties, Boqborowie, 1916-1922.*

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Scotch Grey. Bush. lbs.	Calcutta. Bush. lbs.	Farm Average. Bush. lbs.
1916 . . . . .	22.41	20.28	49 21	28 20	32 33
1917 . . . . .	26.70	21.02	61 20	44 29	49 26
1918 . . . . .	13.87	11.98	33 19	27 8	27 2
1919 . . . . .	18.39	13.77	22 24	21 5	20 6
1920 . . . . .	22.22	19.57	42 30	46 16	43 34
1921 . . . . .	20.50	15.46	32 8	19 8	23 32
1922 . . . . .	20.32	15.61	28 9	23 4	25 12
Means . . . . .	20.63	16.81	38 24	30 1	31 31

*Barley Crops.*—All barley was sown on stubble land at the rate of 60lbs. of seed and 1cwt. of super per acre. Field 25 was ploughed between June 7th and 15th, and sown between the 8th and 17th. Details of this year's barley crops are shown in the next table:—

*Barley Yields, Boqborowie, 1922.*

Variety.	Field Grown.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Roseworthy Oregon . . . . .	Exptl.	3.09	96 37	31 15
Roseworthy Oregon . . . . .	No. 25	19.35	519 35	26 43
Short Head . . . . .	No. 25	16.09	398 13	24 38
Farm average . . . . .		38.53	1,014 35	26 17

This average of 26bush. 17lbs. per acre is fair, considering the barley was grown on stubble land.

The table below shows the behaviour of barley grown on this farm from 1915 to 1922:—

*Barley Returns, Boqborowie, 1915-1922.*

Year.	Total Rainfall. In.	"Useful" Rainfall. In.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
1915 . . . . .	17.14	15.95	3.09	108 26	35 6
1916 . . . . .	22.41	20.28	35.93	1,119 46	31 8
1917 . . . . .	26.70	21.02	23.65	914 26	38 33
1918 . . . . .	13.87	11.98	29.11	1,045 23	35 46
1919 . . . . .	18.39	13.77	32.58	501 1	15 19
1920 . . . . .	22.22	19.57	35.39	1,087 38	30 37
1921 . . . . .	20.50	15.46	52.52	1,454 5	27 34
1922 . . . . .	20.32	15.61	38.53	1,014 35	26 17
Means . . . . .	20.19	16.70	—	—	30 06

*Wheat Crops.*—As usual, an assortment of wheat varieties was grown this season, and the effect of this testing of varieties is plainly seen in the table setting out the yields of the different kinds, for the best crop produced a yield of 34bush. 25lbs. per acre, whereas the poorest did not yield higher than 9bush. 55lbs. per acre. The testing of "new" varieties is essentially one of the operations of an experimental farm, but it has the inevitable result of reducing the wheat yields considerably below those that could be expected from proved varieties. All wheat crops were grown on fallowed land, and the fields which carried these crops were treated as follows:—

Field No. 24.—Part of this field carried wheat in 1919, and the balance was under oats on stubble land. During April, 1920, the field was ploughed and sown with a mixture of barley and oats purely for grazing purposes, and was fallowed in 1921, between August 9th and 19th, harrowed on the 12th and 13th of September, cultivated between 10th and 18th of October.

Field 14.—This field carried a wheat crop in 1918, and was grazed continuously during 1919, was ploughed during May, 1920, and sown with oats and cut for ensilage, was ploughed between 16th and 19th of July, harrowed on the 20th of July, and again on the 6th of August, cultivated on the 14th and 15th of September, cultivated again between the 6th and 8th of June, and drilled in with a number of varieties at the rate of 75lbs. of seed and 2cwts. of super per acre. This field, unfortunately, was burnt by the fire which occurred in this district on the 23rd of December. It carried the following varieties:—Onas, Gluyas, Queen Fan, Caliph, King's Red, Marshall's No. 3, Minister, Yandilla King, Crossbred 53, and Federation—the latter variety was cut for ensilage. All the varieties in this field, excepting Federation, were hand selected.

Field 7.—This field was under a crop of wheat in 1919 on fallowed land and a stubble crop of oats in 1920, was fallowed in 1921 between the 14th and 15th of July, harrowed on the 20th of July, cultivated on the 29th and 30th of September, and again cultivated between the 2nd and 4th of November, cultivated on May 16th, and drilled in on the 17th with 75lbs. of seed and 2cwts. of super per acre.

Field 9A.—This field carried a wheat crop in 1919, a stubble crop of oats in 1920, and was fallowed between August 22nd and 24th, harrowed twice on the 29th, cultivated on September 15th and sown with sunflowers and grazed through the summer months, cultivated from May 12th to 15th, and drilled in with 75lbs. of seed and 2cwts. of super per acre on the 15th of May.

Field 8A.—This field carried a wheat crop in 1920, and was fallowed on the 25th of August, and harrowed twice on the 29th, cultivated and harrowed on the 22nd of May, 1922, and drilled in with 75lbs. of seed and 2cwts. of super per acre on the 23rd.

Field 15.—A portion of this field (approximately three acres) was virgin land, and the balance carried a crop of wheat on fallowed land in 1918, and since then has been grazed continuously. It was fallowed between the 20th and 23rd of September, 1921, was harrowed on the 24th, harrowed again on the 3rd of October, and was cultivated between the 3rd and 5th of October, cultivated on the 11th and 12th of May, 1922, and drilled in with 75lbs. of seed and 2cwts. of super per acre between the 12th and 15th.

The yields of the wheat crops grown as described above, with the total and average yields for the season, will be found in the next table:—

*Wheat Variety Yields, Booborowie, 1922.*

Variety.	Field Grown.	Area. Acres.	Total Yield. Bush. lbs.	Yield per Acre. Bush. lbs.
Federation . . . . .	Manurial plots	0.66	29 36	34 25
Major . . . . .	Field No. 7	5.12	152 48	29 51
Federation . . . . .	Exp. plots	23.3	694 26	29 48
Federation . . . . .	Exp. plots	32.68	870 21	26 38
Crossbred 53 . . . . .	Field 9A	3.00	69 00	23 00
Leak's Rustproof. . . . .	Field 24	0.92	14 25	15 40
Federation . . . . .	Field 8A	0.97	9 37	9 56
Farm average . . . . .		66.85	1,840 13	27 32

The average wheat yield of 27bush. 32lbs. per acre for a season like 1922 is fair. Nine of our regular varieties were destroyed by the fire on the 23rd of December, which leaves us with a very small number to report on.

Major shook out very badly on the 23rd of December, when a terrific gale prevailed, and we commenced harvesting it on the morning of the 23rd, and when three rounds were completed operations had to cease, owing to the fire, and on resuming work after about five days' damp weather we received one bag per round less on a 16 chain land than previously.

The crop on Field 8A was damaged by a neighbor's horse as well as by hares. Leak's Rustproof, in Field 24, blighted badly.

*Wheat Returns, Booborowie, 1912-1922.*

Year.	Total Rainfall.	"Useful" Rainfall.	Area. Acres.	Total Yield.		Yield per Acre. Bush. lbs.
	In.	In.		Bush.	lbs.	
1912	15.50	13.20	180.00	4,645	20	25 48
1913	15.07	10.86	388.75	6,611	53	17 0
1914	9.76	7.79	339.75	990	58	2 55
1915	17.14	15.95	284.28	7,765	2	27 19
1916	22.41	20.28	216.67	7,668	40	35 24
1917	26.70	21.02	153.22	4,984	30	32 32
1918	13.87	11.98	173.81	4,631	32	26 39
1919	18.39	13.77	113.84	3,041	15	26 43
1920	22.22	19.57	91.51	2,937	17	32 5
1921	20.50	15.46	103.10	2,112	32	20 29
1922	20.32	15.61	66.85	1,840	13	27 32
Means	18.35	15.05	—	—	—	24 57

The average yield of 24bush. 57lbs. per acre for the 11-year period is very satisfactory. As will be noted in the above table, eight of the 11 years have been above the average, which clearly shows what a reliable cereal-growing district this is.

*Yields of Wheat Varieties, Booborowie, 1916-1922.*

	Means, 1916- 1918.		1919.		1920.		1921.		1922.		Means, 1919- 1922.	
	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.	B.	L.
Major. . . . .	—		31	47	46	14	28	9	29	48	33	59
Federation . . . .	36	26	26	29	31	12	19	1	27	45	26	7
Leak's Rustproof	*24	0	29	39	29	4	23	25	15	40	24	27
Crossbred 53 . . .	*25	8	21	9	28	59	17	21	23	0	22	37
Onas. . . . .	35	40	24	52	38	23	25	41	Crops destroyed by fire.			
Yandilla King . .	32	24	30	28	41	8	25	50				
Queen Fan . . . .	29	51	24	6	35	13	21	9				
Caliph. . . . .	24	48	31	14	33	27	25	53				
Marshall's No. 3	29	9	29	26	33	38	13	10				
Guyas. . . . .	24	57	31	15	31	58	21	44				
King's Red . . . .	24	45	23	53	35	15	22	57				
Minister. . . . .	*34	6	26	54	34	38	22	26				

\* 1918 only.

PERMANENT EXPERIMENTAL PLOTS.

Instead of placing experimental plots in different fields each year, the policy of permanent plots has been adopted, with the idea of eliminating residual effects of fertilisers or previous soil treatments.

BARE FALLOW-WHEAT EXPERIMENTS.

Various series of permanent experiments dealing with wheat on bare fallow-wheat rotation, and covering manurial, cultivation, and depth of ploughing tests, were mapped out in 1915. The plots carried

their first crops in 1916. The plots are so arranged that one-half of each is fallowed every alternate year, the half fallowed one year carrying a crop the following year, and *vice versa*. For the seven seasons that these plots have been cropped Federation wheat has been used on all plots.

*Permanent Manurial Plots, Booborowie, 1916-1922.*

Plot.

1.  $\frac{1}{2}$ wt. superphosphate.
2. 1wt. superphosphate.
3. 2cwts. superphosphate.
4. 3cwts. superphosphate.
5. No manure.
6. 1wt. super,  $\frac{1}{2}$ wt. nitrate of soda (spring).
7. 2cwts. super,  $\frac{1}{2}$ wt. nitrate of soda (spring).
8. 1wt. super,  $\frac{1}{2}$ wt. sulphate of ammonia (seeding).
9. 2cwts. super,  $\frac{1}{2}$ wt. sulphate of ammonia (seeding).
10. 1wt. super,  $\frac{1}{2}$ wt. muriate of potash (seeding).
11. 2cwts. super,  $\frac{1}{2}$ wt. muriate of potash (seeding).
12. 2cwts. super,  $\frac{1}{2}$ wt. muriate of potash (seeding),  $\frac{1}{2}$ wt. nitrate of soda (spring).
13. 1wt. superphosphate.
14. No manure.
15. 1wt. basic slag.
16. 2cwts. basic slag.
17. 10 tons farmyard manure.
18. 10 tons farmyard manure, 2cwts. super.
19. 10 tons farmyard manure, 2cwts. super,  $\frac{1}{2}$ wt. muriate of potash.
20. 2cwts. super, 4cwts. gypsum.
21. 2cwts. super, 5cwts. lime.
22. 2cwts. super (half at ploughing).
23. 2cwts. super (half at ploughing),  $\frac{1}{2}$ wt. nitrate of soda (spring).

Plot.	Yield per Acre.								Means. 1916-22.
	1916. B. L.	1917. B. L.	1918. B. L.	1919. B. L.	1920. B. L.	1921. B. L.	1922. B. L.	1923. B. L.	
1 . . . . .	36 58	28 23	23 28	26 50	30 11	11 52	23 25	25 32	
2 . . . . .	38 57	28 14	34 27	29 3	29 52	13 45	27 34	28 56	
3 . . . . .	39 3	30 5	40 50	28 16	28 31	19 40	32 29	31 16	
4 . . . . .	38 0	29 20	41 4	30 39	32 6	18 39	35 11	32 9	
5 . . . . .	32 58	27 39	24 24	17 32	23 29	5 25	13 11	20 46	
6 . . . . .	40 18	34 50	35 38	27 34	32 56	18 17	26 45	30 54	
7 . . . . .	40 50	34 36	36 33	31 35	32 5	19 14	26 2	31 34	
8 . . . . .	41 25	31 18	32 33	28 53	33 39	17 22	28 45	30 34	
9 . . . . .	38 11	36 13	34 28	29 33	30 48	21 21	26 25	31 0	
10 . . . . .	40 50	32 31	34 44	28 9	28 44	12 13	26 31	29 6	
11 . . . . .	44 1	30 54	34 41	29 0	29 20	19 26	28 10	30 47	
12 . . . . .	40 34	34 28	36 31	29 7	30 38	19 58	30 42	31 43	
13 . . . . .	40 11	34 55	34 18	25 58	29 36	17 6	28 37	30 9	
14 . . . . .	40 9	28 31	24 36	14 6	21 9	3 9	12 53	20 39	
15 . . . . .	41 55	34 14	28 49	22 26	28 30	21 47	24 30	28 55	
16 . . . . .	42 23	39 43	28 10	27 47	29 22	21 46	24 19	30 30	
17 . . . . .	40 7	31 26	28 25	28 8	29 49	12 5	26 10	28 1	
18 . . . . .	41 44	32 41	32 40	32 17	28 43	21 0	27 37	30 57	
19 . . . . .	42 5	31 56	32 0	32 12	33 34	20 16	27 42	31 24	
20 . . . . .	41 8	31 36	33 12	29 13	28 43	20 29	29 25	30 32	
21 . . . . .	45 58	35 38	31 3	29 36	29 15	19 51	29 52	31 36	
22 . . . . .	40 40	32 18	30 16	28 52	28 59	18 44	27 35	29 58	
23 . . . . .	41 31	32 20	31 55	28 3	31 20	18 40	28 37	30 21	



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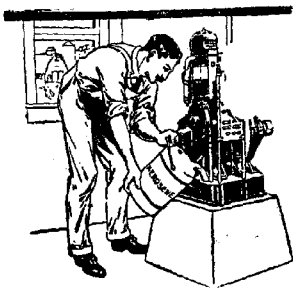
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These manurial tests with wheat have been conducted continuously for the past six seasons, and in such a series of seasons, and in these particular soil conditions, they appear to indicate that:—

1.—A  $\frac{1}{2}$  cwt. dressing of superphosphate gives an increase of 4bush. 13lbs. of wheat per acre over and above the yield received from wheat grown without manure.

2.—A dressing of 1 cwt. of superphosphate gives an increased yield of 8bush. 50lbs. per acre.

3.—A 2 cwt. application of superphosphate gives an increase of 10bush. 37lbs. per acre.

4.—A 3 cwt. application of superphosphate gives an increase of 11bush. 29lbs. per acre.

5.—A dressing of 1 cwt. superphosphate gives an increase of 3bush. 37lbs. over and above that received from a  $\frac{1}{2}$  cwt. dressing superphosphate.

6.—A dressing of 2 cwts. superphosphate gives an increase of 5bush. 24lbs. over a  $\frac{1}{2}$  cwt. dressing.

7.—A dressing of 3 cwts. superphosphate gives an increase of 6bush. 16lbs. over a  $\frac{1}{2}$  cwt. dressing.

8.—A dressing of 2 cwts. superphosphate gives an increase of 1bush. 47lbs. over and above that received from a dressing of 1 cwt. superphosphate.

9.—A dressing of 3 cwts. superphosphate gives an increase of 2bush. 39lbs. over a 1 cwt. application.

10.—A 3 cwt. dressing of superphosphate gives an increase of 52lbs. over and above that received from a 2 cwt. application of superphosphate.

11.—An application of 1 cwt. basic slag gives an increase of 8bush. 14lbs. over the no-manure plots.

12.—An application of 2 cwts. basic slag gives an increase of 9bush. 51lbs. over the no-manure plots.

13.—A 2 cwt. dressing of basic slag gives an increase of 1bush. 37lbs. over a 1 cwt. application of basic slag.

14.—The addition of  $\frac{1}{2}$  cwt. nitrate of soda to a dressing of 1 cwt. superphosphate gives an increase of 1bush. 25lbs. per acre.

15.—The addition of  $\frac{1}{2}$  cwt. nitrate of soda to a dressing of 2 cwts. superphosphate gives an increase of 18lbs.

- 16.—An application of  $\frac{1}{2}$  cwt. sulphate of ammonia added to 1 cwt. of superphosphate gives an increase of 1 bush. 5 lbs.
- 17.—An application of  $\frac{1}{2}$  cwt. sulphate of ammonia added to a 2 cwt. dressing of superphosphate results in a loss of 16 lbs. per acre.
- 18.—A  $\frac{1}{2}$  cwt. dressing of muriate of potash in addition to 1 cwt. superphosphate results in a loss of 23 lbs. per acre.
- 19.—A  $\frac{1}{2}$  cwt. dressing of muriate of potash in addition to 2 cwt. superphosphate results in a loss of 29 lbs.
- 20.—The addition of  $\frac{1}{2}$  cwt. muriate of potash and  $\frac{1}{2}$  cwt. nitrate of soda to 2 cwt. superphosphate gives an increase of 27 lbs. The addition of  $\frac{1}{2}$  cwt. muriate of potash gives an increase of 9 lbs. over the superphosphate and nitrate of soda. The addition of  $\frac{1}{2}$  cwt. nitrate of soda gives an increase of 56 lbs. over the superphosphate and muriate of potash dressing.
- 21.—Ten tons of farmyard manure per acre gives an increase of 7 bush. 22 lbs. of wheat over no-manure, at a minimum cost of £4 for the fertiliser.
- 22.—Ten tons of farmyard manure and 2 cwt. of superphosphate per acre gives a yield of 19 lbs. of wheat less than that received from a dressing of 2 cwt. superphosphate alone. The addition of  $\frac{1}{2}$  cwt. muriate of potash to 2 cwt. superphosphate and 10 tons farmyard manure only gives an increase of 27 lbs. per acre.
- 23.—The addition of 4 cwt. gypsum to the dressing of 2 cwt. superphosphate results in a loss of 44 lbs. of wheat per acre.
- 24.—The addition of 5 cwt. lime to a dressing of 2 cwt. superphosphate gives an increase of 20 lbs. per acre at a minimum extra cost of 8s. for lime.
- 25.—Putting half of the superphosphate into the land at ploughing time, and at the depth of ploughing, does not give an increase over the method of putting all of the superphosphate in with the seed when 2 cwt. of superphosphate is used to the acre.
- 26.—The addition of  $\frac{1}{2}$  cwt. of nitrate of soda to 2 cwt. superphosphate, when half of the latter fertiliser is put in the soil at ploughing time, only gives an increase of 53 lbs. per acre.

#### MONEY VALUES OF INCREASE.

Owing to the varying prices of both grain and fertilisers, it is quite impossible to put a correct money value on the increases secured from different fertilisers, but if we take figures about 25 per cent. in



advance of pre-war prices we can compare the results as shown below. In the table below the prices used to arrive at the values of grain increases are:—

	s. d.
Wheat . . . . .	3 9 per bush.
Superphosphate . . . . .	5 0 per cwt.
Basic slag . . . . .	5 0 " "
Nitrate of soda . . . . .	18 0 " "
Sulphate of ammonia . . . . .	16 0 " "
Muriate of potash . . . . .	18 0 " "
Farmyard manure . . . . .	8 0 per ton
Gypsum . . . . .	2 0 " cwt.
Lime . . . . .	32 0 " ton

Addition of—	To—	Gives Increase of—	Increase at 3s. 9d. per Bush.	Cost of Extra Outlay.	Profit per Acre.
		B. L.	s. d.	s. d.	s. d.
½ cwt. super. . . . .	No manure . . . . .	4 13	15 10	2 6	13 4
1 cwt. super. . . . .	No manure . . . . .	8 50	33 2	5 0	28 2
2 cwt. super. . . . .	No manure . . . . .	10 37	39 10	10 0	29 10
3 cwt. super. . . . .	No manure . . . . .	11 29	43 1	15 0	28 1
½ cwt. super. . . . .	½ cwt. super. . . . .	3 37	13 7	2 6	11 1
1½ cwt. super. . . . .	½ cwt. super. . . . .	5 24	20 3	7 6	12 9
2½ cwt. super. . . . .	½ cwt. super. . . . .	6 16	23 6	12 6	11 0
1 cwt. super. . . . .	1 cwt. super. . . . .	1 47	6 8	5 0	1 8
2 cwt. super. . . . .	1 cwt. super. . . . .	2 39	9 11	10 0	Loss
1 cwt. super. . . . .	2 cwt. super. . . . .	0 52	3 3	5 0	Loss
1 cwt. basic slag . . . . .	No manure . . . . .	8 14	30 11	5 0	25 11
2 cwt. basic slag . . . . .	No manure . . . . .	9 51	36 11	10 0	26 11
1 cwt. basic slag . . . . .	1 cwt. basic slag . . . . .	1 37	6 1	5 0	1 1
½ cwt. nitrate of soda . . . . .	1 cwt. super. . . . .	1 25	5 4	9 0	Loss
½ cwt. nitrate of soda . . . . .	2 cwt. super. . . . .	0 18	1 2	9 0	Loss
½ cwt. sulphate of ammonia . . . . .	1 cwt. super. . . . .	1 5	4 1	8 0	Loss
½ cwt. sulphate of ammonia . . . . .	2 cwt. super. . . . .	*—	—	8 0	Loss
½ cwt. muriate of potash . . . . .	1 cwt. super. . . . .	†—	—	9 0	Loss
½ cwt. muriate of potash . . . . .	2 cwt. super. . . . .	‡—	—	9 0	Loss
½ cwt. muriate of potash and ½ cwt. nitrate of soda . . . . .	2 cwt. super. . . . .	0 27	1 8	9 0	Loss
½ cwt. muriate of potash . . . . .	2 cwt. super. and ½ cwt. nitrate of soda . . . . .	0 9	0 7	9 0	Loss
½ cwt. nitrate of soda . . . . .	2 cwt. super. and ½ cwt. muriate of potash . . . . .	0 56	3 6	9 0	Loss
10 tons farmyard manure . . . . .	No manure . . . . .	7 22	27 8	80 0	Loss
10 tons farmyard manure . . . . .	2 cwt. super. . . . .	§—	—	80 0	Loss
½ cwt. muriate of potash . . . . .	10 tons farmyard manure and 2 cwt. super. . . . .	0 27	1 8	9 0	Loss
4 cwt. gypsum . . . . .	2 cwt. super. . . . .	—	—	8 0	Loss
5 cwt. lime . . . . .	2 cwt. super. . . . .	0 20	1 3	8 0	Loss

\* 16lbs. decrease.

† 23lbs. decrease.

‡ 29lbs. decrease.

§ 9lbs. decrease.

|| 44lbs. decrease.

*Permanent Cultivation Plots, Booborowie, 1916-1922.*

All plots dressed with 2cwts. superphosphate per acre.

Plot	Treatment.									
24.	Ploughed 6in. deep and harrowed within a few days. Cultivated or harrowed whenever weeds or a crust render necessary.									
25.	Ploughed 6in. deep and left rough throughout the winter. Cultivated or harrowed whenever weeds or a crust render necessary.									
26.	Ploughed 6in. deep and rolled within a few days, and cultivated or harrowed according to circumstances. Cultivated or harrowed whenever weeds or a crust render it necessary.									
27.	Ploughed 6in. deep, and skim-ploughed after first rain. Cultivated or harrowed whenever weeds or a crust render necessary. Late fallow (September).									
28.	Ploughed 3in. deep, and cultivated according to requirements, but not rolled.									
29.	Ploughed 6in. deep and heavily rolled the same day as ploughed. Cultivated according to requirements.									
30.	Autumn ploughing (March or April), not bare-fallowed, but ploughed 4in. deep, and immediately rolled. Cultivated according to requirements.									
	Yield per Acre.									
	1916.	1917.	1918.	1919.	1920.	1921.	1922.	Means,		
Plot.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	
24 .. .. .	40 48	31 33	31 44	28 30	30 29	19 14	28 25	30 6		
25 .. .. .	41 4	35 52	33 56	28 45	29 19	19 30	30 9	31 14		
26 .. .. .	33 25	33 14	29 34	27 31	28 26	20 40	27 43	28 39		
27 .. .. .	41 1	33 47	32 24	25 53	27 57	19 27	29 34	30 0		
28 .. .. .	35 58	32 29	31 28	26 25	29 6	17 15	22 18	27 51		
29 .. .. .	37 45	30 56	31 25	26 39	28 46	16 34	24 53	28 8		
30 .. .. .	35 49	24 3	28 12	17 58	26 30	9 29	18 45	22 58		

*Permanent Depth of Ploughing Plots, Booborowie, 1916-1922.*

All plots dressed with 2cwts. superphosphate per acre.

Plot.	Depth of Ploughing.									
31.	Ploughed 3in. deep.									
32.	Ploughed 6in. deep.									
33.	Ploughed 9in. deep.									
34.	Ploughed 9in. deep. To be then twice ploughed 3in. deep before again ploughing 9in. deep.									
	Yield per Acre.									
	1916.	1917.	1918.	1919.	1920.	1921.	1922.	Means,		
Plot.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	
31 .. .. .	40 2	28 20	33 38	27 25	28 23	19 56	26 22	29 9		
32 .. .. .	37 26	31 24	32 42	27 1	28 50	21 24	28 44	29 39		
33 .. .. .	33 54	33 17	32 23	27 20	29 19	20 44	27 38	29 13		
34 .. .. .	33 44*	—	30 35†	—	29 34†	—	24 4*	—		
	—	32 13*	—	27 36†	—	20 44†	—	28 21		

\* 9in. ploughing. † 3in. ploughing.

The tests, comparing different methods of cultivating land for wheat growing, show that where the same variety of wheat and the same manuring are used at Booborowie, for a series of seasons, such as the past seven:—

1. Bare fallowing the land early or late, and any subsequent method of cultivation, increases the yield above non-fallow to the extent of from 4bush. 53lbs. to 8bush. 16lbs. per acre.

2. The biggest returns are obtained from fallowed land prepared according to the recognised practice of the district, i.e., ploughing early (July), leaving rough throughout the winter, then cultivating or harrowing whenever weeds or a surface crust render it necessary.

3. Harrowing the land immediately after ploughing appears to have a depressing effect to the extent of about 1bush. per acre in the yield.

4. The rolling immediately after early ploughing (July) appears to have a depressing effect on the yield to the extent of  $2\frac{1}{2}$ bush. per acre.

5. Skim ploughing the fallowed land after the first rain does not increase the yield received from ordinary fallow treatment.

6. Land ploughed in July in preparing the bare fallow gives an increase of 1bush. 58lbs. per acre over the yield received from land ploughed in September.

7. September ploughing gives about equal yields whether ploughed shallow (3in.) and not rolled, or ploughed deep (6in.) and heavily rolled the same day.

8. The depth to which land is ploughed between 3in. and 9in. has had but little effect on the yields of wheat crops in this locality up to the present, though ploughing 9in. deep, and then twice ploughing 3in. deep before again ploughing 9in. seems to have a depressing effect to the extent of about 1bush. per acre.

#### ROTATION OF CROPS.—EXPERIMENTAL PLOTS.

Several series of permanent experimental plots were planned out in 1915, and all of these have been continued since that time. The field chosen for the rotation plots was, fortunately, bare fallowed in 1914, so that crops and records for these crops commence from that year.

#### *Rotation Plots, Booborowie, 1915-1922.*

	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	Means, 1915-22.
	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.
SERIES I.—Plots 1 and 2.									
<i>Bare fallow—Wheat (2cwt. super).</i>									
Wheat .	29 42	30 28	32 22	23 10	23 5	28 29	24 0	30 29	27 43
SERIES II.—Plots 3 and 4.									
<i>Bare fallow—Sorghum—Wheat (2cwt. super).</i>									
Wheat .	34 44	31 20	31 50	19 49	24 37	31 50	16 37	30 8	27 37
SERIES IIIA.—Plots 5 to 7.									
<i>Pasture—Bare fallow—Wheat (no manure).</i>									
Wheat .	29 5	28 45	25 40	15 40	20 6	22 17	16 44	16 56	21 54

## Rotation Plots, Booborowie, 1915-1922—continued.

	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	Means. 1915-22.
	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.	B. L.
SERIES IIIB.—Plots 8 to 10.									
<i>Pasture—Bare fallow—Wheat (1cwt. super).</i>									
Wheat .	37 9	37 47	35 10	26 5	29 53	35 54	23 14	33 18	32 17
SERIES IIIC.—Plots 11 to 13.									
<i>Pasture—Bare fallow—Wheat (1cwt. super).</i>									
Wheat .	38 51	39 17	36 6	27 56	28 28	35 51	22 36	38 24	33 26
SERIES IIID.—Plots 14 to 16.									
<i>Pasture—Bare fallow—Wheat (2cwt. super).</i>									
Wheat .	37 6	39 30	36 48	23 55	28 41	33 1	23 43	30 43	31 41
SERIES IIIE.—Plots 17 to 19.									
<i>Pasture—Bare fallow—Wheat (3cwt. super).</i>									
Wheat .	39 40	40 0	32 58	25 43	27 26	32 17	25 1	34 43	32 13
SERIES IVA.—Plots 20 to 22.									
<i>Bare fallow—Wheat (2cwt. super)—Barley (1cwt. super).</i>									
Wheat .	37 37	43 40	38 33	27 6	25 13	33 25	22 22	33 23	32 40
Barley (50lbs.)	31 9	33 23	45 32	43 18	14 30	42 32	34 8	29 43	34 18
SERIES IVB.—Plots 23 to 25.									
<i>Bare fallow—Wheat (2cwt. super)—Oats (1cwt. super).</i>									
Wheat .	34 0	42 25	41 52	28 18	26 26	38 6	20 27	31 4	32 50
Oats. (40lbs.)	31 9	33 23	45 32	43 18	14 30	42 32	34 8	38 7	35 20
SERIES IVC.—Plots 26 to 28.									
<i>Bare fallow—Wheat (2cwt. super)—Peas (1cwt. super).</i>									
Wheat .	36 23	42 41	39 37	24 2	28 39	37 24	20 41	38 39	33 31
SERIES IVd.—Plots 29 to 31.									
<i>Bare fallow—Wheat (2cwt. super)—Rape (1cwt. super).</i>									
Wheat .	31 52	44 47	38 44	29 31	22 18	33 40	24 51	24 57	31 20
SERIES V.—Plots 32 and 33.									
<i>Bare fallow—Wheat (2cwt. super).</i>									
Wheat .	34 52	44 47	38 44	29 31	22 18	33 40	24 51	24 16	31 37
SERIES VIA.—Plots 34 to 37.									
<i>Pasture—Bare fallow—Wheat (2cwt. super)—Oats (2cwt. super).</i>									
Wheat .	35 1	49 5	37 56	27 19	27 24	33 12	19 57	23 31	31 41
Barley	41 7	34 16	27 43	37 28	14 5	24 1	14 49	32 25	28 15
SERIES VIb.—Plots 38 to 41.									
<i>Pasture—Bare fallow—Wheat (2cwt. super)—Oats (2cwt. super).</i>									
Wheat .	35 49	48 42	39 25	28 54	28 11	36 57	22 52	29 50	33 50
Oats .	40 20	23 5	43 24	41 3	12 13	38 27	19 21	33 1	31 19
SERIES VII.—Plots 42 to 46.									
<i>Bare fallow—Wheat (2cwt. super)—Lucerne, Lucerne—Lucerne.</i>									
Wheat .	33 37	33 47	41 37	33 30	28 1	36 40	22 7	31 48	32 38
SERIES VIII.—Plots 47 to 50.									
<i>Bare fallow—Wheat (2cwt. super)—Rye grass, Rye grass.</i>									
Wheat .	22 0	47 30	32 45	25 26	23 45	32 19	21 7	31 48	29 35

*Grazing Crops in Rotation Plots.*

	Sheep per acre.						Means,
	1917.	1918.	1919.	1920.	1921.	1922.	1917- 1922.
<b>SERIES II.—</b>							
Sorghum . . . . .	2.90	2.13	5.43	4.59	3.68	3.17	3.65
<b>SERIES IIIA.—</b>							
Pasture after wheat without manure ..	0.89	0.57	2.61	4.21	3.90	2.23	2.46
<b>SERIES IIIB.—</b>							
Pasture after wheat with $\frac{1}{2}$ wt. super ..	1.28	0.99	2.61	3.60	4.15	3.42	2.68
<b>SERIES IIIC.—</b>							
Pasture after wheat with 1wt. super ..	0.85	1.29	2.09	3.60	5.47	3.42	2.79
<b>SERIES IIID.—</b>							
Pasture after wheat with 2cwts. super ..	1.55	0.99	2.46	3.79	5.31	3.65	2.96
<b>SERIES IIIE.—</b>							
Pasture after wheat with 3cwts. super ..	1.24	0.71	2.32	4.49	5.77	3.39	2.99
<b>SERIES IVC.—</b>							
Peas with 1wt. super- phosphate . . . . .	2.15	1.59	2.14	5.39	5.74	2.57	3.26
<b>SERIES IVD.—</b>							
Rape with 1wt. super- phosphate . . . . .	1.59	1.41	2.16	6.48	2.05	1.52	2.53
<b>SERIES VIA.—</b>							
Pasture after barley with 2cwts. super ..	1.23	1.27	1.78	2.53	4.01	3.17	2.33
<b>SERIES VIB.—</b>							
Pasture after oats with 2cwts. super .	1.46	1.47	1.81	3.95	3.96	2.08	2.45
<b>SERIES VII.—</b>							Means, three years' period.
Lucerne sown with wheat and 2cwts. super, 1916 and							
1921 crop (Plot 42)	1.49	2.06	1.52	—	—	—	1.69
1917 crop (Plot 46)	—	1.05	1.23	5.80	—	—	2.71
1918 crop (Plot 45)	—	—	1.38	4.63	7.57	—	4.53
1919 crop (Plot 44)	—	—	—	3.09	4.46	3.15	3.57
1920 crop (Plot 43)	—	—	—	—	6.79	2.61	—
1921 crop (Plot 42)	—	—	—	—	—	2.09	—
<b>SERIES VIII.—</b>							Means, two years' period.
Rye grass sown with wheat and 2cwts. super—							
1915 crop (Plot 48)	0.97	—	—	—	—	—	—
1916 crop (Plot 47)	2.20	1.30	—	—	—	—	1.75
1917 crop (Plot 50)	—	2.53	2.35	—	—	—	2.44
1918 crop (Plot 49)	—	—	1.77	6.29	—	—	4.03
1919 crop (Plot 48)	—	—	—	4.85	6.29	—	5.57
1920 crop (Plot 47)	—	—	—	—	4.80	3.19	4.0
1921 crop (Plot 50)	—	—	—	—	—	2.12	—

*Grazing Crops in Rotation Plots—continued.*

Sheep per Acre.

SERIES IX.—	1917.	1918.	1919.	1920.	1921.	1922.	1919-22.	Means.
Continuous grazing ..	—	—	0.78	3.94	5.28	2.14		3.03

*Seed in Rotation Plots, 1922.*

Wheat—Federation .. . . .	75lbs. per acre.
Barley—Roseworthy Oregon .. . . .	50lbs. per acre.
Oats—Scotch Grey .. . . .	80lbs. per acre.
Peas—Early Dun. . . . .	100lbs. per acre.
Rape—Dwarf Essex .. . . .	5lbs. per acre.
Lucerne—Hunter River .. . . .	6lbs. per acre.
Rye grass—Italian .. . . .	9½lbs. per acre.
Sorghum—Early Amber Cane. . . . .	6lbs. per acre.

## ORCHARD NOTES FOR SOUTHERN DISTRICTS.

[By C. H. BEAUMONT, Instructor and Inspector.]

Fruit picking will have been completed except for a few very late varieties; even late sorts do better on the shelf than exposed to rain and frost. Do not forget to have the trees you intend to work from marked, so that pruners will leave the necessary wood. It is only by studying your trees that the best results are possible, and only wood or buds from good type trees should be used for propagating purposes.

Clear up all windfalls; vinegar makers are offering a good price for them, or they may be used to feed stock. If left on the ground to rot they help to increase fungus troubles.

Young orange or other citrus trees will need a little protection from frosts, so have them shaded from the rising sun. Cut away all low growth from the citrus trees where brown rot is feared, and have the ground under the trees in grass or crop of some sort, or else have a heavy mulch of pea straw or other material.

If you are adding to the orchard you will have ordered the trees before this. Get the land worked and holes opened as early as possible, so as to be ready to take the trees as soon as the nurseryman can lift them.

Pruning may be proceeded with. If you are in doubt about cutting out limbs, &c., leave them. Remember that it takes years to grow a good limb; it is better to err on the side of too little pruning than to over do it, especially in trees in bearing. Young trees forming must be dealt with according to the district and soil. Do not forget that the Orchard Instructor in your district is always ready to give you his advice. Trees which do not appear healthy should be pruned before or after the others. Do not use a scateur on a healthy tree, after pruning a sick tree, until it has been dipped in boiling water or formalin.

## RIVER MURRAY HERD TESTING ASSOCIATION.

## RESULTS OF BUTTERFAT TESTS FOR FEBRUARY, 1923.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during February.	Per Cow during February.	Per Cow October to February.	Per Herd during February.	Per Cow during February.	Per Cow October to February.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1/C	31	27.54	21266	686.00	4073.06	842.18	27.17	162.86
1/E	22	20.32	13009	591.30	3003.41	547.44	24.88	126.25
1/J	17.39	15.07	8792	505.57	2710.29	409.27	23.53	118.19
1/L	16	13.68	8057	503.56	3024.41	378.69	23.67	134.96
1/M	22.93	19.68	11952.5	521.24	2650.39	619.15	27.00	126.34
1/R	12.18	10.50	6090	500.00	2646.65	300.20	24.65	125.20
1/T	12	9.75	7081.5	590.12	2702.46	337.79	28.15	129.96
1/U	14	14	12012	858.00	2810.27	528.40	37.74	117.59
1/W	12	11.68	8087	673.91	3234.87	287.90	23.99	119.97
1/X	19	19	11060	582.10	3131.18	513.93	27.05	138.21
1/Y	20.54	17.89	11936	581.10	3283.22	514.05	25.03	141.18
1/Z	20	15.71	9312.5	465.63	2590.64	430.65	21.53	117.50
*1/AA	6	6	4978	829.67	3022.66	230.01	38.34	132.62
*1/BB	10	8.89	5621	562.10	2070.60	248.25	24.83	92.18
†1/CC	11	9	4256	386.91	1405.75	179.73	16.34	60.31
‡1/V	16	15.64	10795	674.61	—	440.73	27.55	—
Means	16.38	14.65	9644.07	588.86	3100.15	425.52	25.98	133.30

\*Entered November 1st, 1922. †Entered December 1st, 1922. ‡Entered February 1st, 1923.

## Mr. Orchardist, has it occurred to you

that **IDLE ACRES PAY NO RENT**, and that those blank spaces in your orchard would become profitable and greatly increase the value of your property if planted with good fruit trees. Fill them this season with **QUALITY FRUIT TREES** from the Balhannah Nurseries.

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# MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

## RESULTS OF BUTTERFAT TESTS FOR FEBRUARY, 1923.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during February.	Per Cow during February.	Per Cow August to February.	Per Herd during February.	Per Cow during February.	Per Cow August to February.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/A	20	18	5782	289-10	4199-02	265-28	13-26	178-43
2/B	7	5	2506	358-00	6722-43	105-86	15-12	280-22
2/C	21	16-50	6790	323-33	4850-28	284-43	13-54	196-24
2/D	14	10-68	4479	319-93	3594-51	181-35	12-95	143-51
2/E	11	11	5810	528-18	5074-04	252-81	22-98	222-38
2/F	20	13-82	4082	204-10	4313-81	160-16	8-01	174-27
2/G	3	3	1918	639-33	6240-33	89-76	29-92	279-22
2/H	28	28	11018	393-50	4295-18	486-30	17-37	176-72
2/I	15	14	7224	481-60	4569-09	307-00	20-47	186-17
2/J	12-64	12-64	7790	616-29	5912-66	322-11	25-48	248-42
2/K	19-68	17-96	10963	557-05	4491-44	451-29	22-93	187-77
2/L	33	26-04	11254	341-02	3563-23	506-44	15-35	137-32
2/M	67-46	43-50	14421-5	213-77	3294-48	654-11	9-70	132-88
2/N	14	14	4662	333-00	3314-89	201-77	14-41	124-06
2/O	42	28-50	9802	233-38	3032-97	426-48	7-16	158-32
2/Q	33	21-39	5607	169-91	3851-55	236-36	31-87	264-97
2/R	15	13-96	10956	730-40	6192-36	478-01		
Means	22-10	17-53	7356-73	332-81	4098-78	318-21	14-40	170-80

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## THE AGRICULTURAL BUREAU, 1923.

### CONFERENCE OF MID-NORTHERN BRANCHES.

Branches of the Agricultural Bureau situated in the Mid-Northern areas of the State met in Conference at Laura, on Wednesday, March 14th. The Department of Agriculture was represented by the Minister of Agriculture (Hon. G. F. Jenkins, M.P.), Messrs. C. J. Tuckwell, A. M. Dawkins (Members of the Advisory Board of Agriculture), the Director of Agriculture (Professor A. J. Perkins), the Government Dairy Expert (Mr. P. H. Suter), the Conservator of Forests (Mr. W. Gill), and the Secretary of the Advisory Board (Mr. H. J. Finnis). There was also an excellent attendance of delegates, representing the following Branches:—Laura, Wirrabara, Crystal Brook, Booleroo Centre, Tarowie, Gladstone, Nelshaby, North Bundaleer, and Appila. An excellent display of produce was exhibited, the most striking exhibits being a collection of wheat grown during the past harvest by Mr. E. G. Blesing, of Laura, and a fine variety of fruits and vegetables tabled by Mr. F. T. Hughes (Laura). Proceedings were opened with the National Anthem, after which the Chairman of the local Branch (Mr. H. R. Lines), in the course of a short address, extended a cordial welcome to the visitors and delegates.

The Minister of Agriculture (Hon. G. F. Jenkins, M.P.), on being called upon to open the Conference, said he had attended a large number of Congresses, Conferences, and Branch meetings of the Agricultural Bureau, but this was the first occasion on which he had had the privilege of opening a Bureau Conference in the capacity of Minister of Agriculture. Continuing, the Minister said that practically the whole of his life had been devoted to agricultural pursuits and the raising of livestock, and because of that he had always taken a very keen interest in the work of the Agricultural Bureau. Every Minister of Agriculture recognised that the members of the Agricultural Bureau were the cream of the agriculturists of the State. The Government naturally looked to these Conferences, and to the Advisory Board to give some lead as to the requirements of the Agricultural community of the State. Wherever it was possible, the recommendations arising from such bodies were given effect to by the Government, which gave all such matters serious consideration. No man could hold the office of Minister of Agriculture for any length of time without realising the very fine work that was being performed by the Agricultural Bureau. The Minister said he wished to express a note of regret, that a foundation and valuable member of the Agricultural Bureau had, since the last Conference, passed away. He referred to the late Mr. W. J. Venning, of Crystal Brook. He also desired to express sympathy with Mr. W. S. Kelly (Chairman of the Advisory Board), who, on account of illness, was unable to be present at the Conference. Mr. Jenkins said that last week Cabinet had been

pleased to grant to a member of the Gladstone Branch (Mr. R. E. Lines) an Honorary Commission to report on matters relating to agriculture and sheep breeding during that gentleman's visit to the Old Country. Referring to the work that the Government was doing for the agricultural community, the Minister said that one of the benefits that was derived from the Government Experimental Farms was that of ensuring a supply of pure seed wheat, true to type, for the farmer. Seed wheat was in such demand, particularly as applied to the Roseworthy Agricultural College and the Booborowie Experimental Farm, that the Government had been unable to cope with the orders. The Government had decided, instead of supplying an unlimited quantity to individual farmers, to ration out supplies in order that as many farmers as possible would be able to secure seed wheat of the type they required. With respect to the dairying industry, the Government had given approval for the formation of Herd Testing Societies, and the benefits that the dairymen had received in districts where societies had been formed, had fully justified that move of the Government. Further indication of the Government's sympathy towards the primary producer was also evidenced at the Booborowie Experimental Farm, where reinforced concrete fencing posts were being manufactured at low cost for the benefit of those farmers in the immediate neighborhood who were burnt out during the terrible fire of December, 1922. The Advisory Board of Agriculture recently carried a resolution with respect to the encouragement of crop competitions for the wheat-growing areas of the State, with a suggestion that a prize of £100 should be given for the best wheat crop. Before acceding to that request, the Minister said he wanted something to justify such a petition to the Government. He wanted to feel that the agricultural community in the State would take the matter up in earnest, and when he found evidence of that, he was prepared to go into the matter and recommend every reasonable assistance to the proposal. Already several wheat-growing districts, including Maitland, Naracoorte, Lameroo, and Kybyholite had instituted crop competitions, and these had been attended with a good deal of success. Crop competitions had been run with most satisfactory results in Victoria, but in that State the competitions had received no financial assistance from the Government. There, the competitions were managed very largely by the Agricultural Societies. Once established the competitions would develop a very healthy spirit of rivalry between the various districts. As a State, they had every reason to be proud of their agriculturists, but they did not want to stand still. If the price of land continued to rise as it had done during the last few years, then it would be necessary that they, as farmers, should strive to produce the last ounce from their holdings. He hoped that every possible good would eventuate from the gathering, and then declared the Conference open.

Mr. J. Watt, of the Laura Branch, then contributed a paper, "Our Inheritance in the Hills," in which he dealt with the fruit growing and closer settlement possibilities of the country extending from Beetaloo Valley in the south to Wilmington in the north. Mr. C. J. Tuckwell

(member of the Advisory Board) stated that during a recent visit to London he had ascertained that two and a half million cases of Australian apples were placed in the London market last season. All the fruit was landed within six weeks, and it was to be regretted that a large proportion did not open up in saleable condition. The main cause of the trouble was "brown heart." He had submitted a number of recommendations to the Minister regarding the fruit industry, including the branding of pre-cooled fruit prior to its being placed on board.

After the luncheon adjournment, Mr. C. H. Lines, of the Gladstone Branch, contributed a paper, "Facts Concerning Merino Sheep," and an interesting discussion followed. The Director of Agriculture (Prof. A. J. Perkins) then dealt with the subject "Herd Testing Societies." The Director's remarks were followed by a short address from the Dairy Expert (Mr. P. H. Suter). During the session set aside for Free Parliament, the following resolutions were carried:—Mr. T. S. Kerin (Gladstone), "That in the opinion of this Conference, manufacturers should supply superphosphate direct to the farmer, thus saving the farmer the 8s. per ton now paid to distributors and agents." On the motion of Mr. R. Townsend (Crystal Brook) it was decided— "That the State be divided into two areas. All that part of the State north of a line running from Renmark to Wallaroo, and the portion of the State south of that division; and that in the northern portion the simultaneous destruction of rabbits take place during the last 14 days of January and the first 14 days of February, and in the southern part during the last 14 days of February and the first 14 days of March." Mr. H. H. Sargent (Gladstone) moved—"That bulls be inspected before registration." It was decided that the 1923 Conference should be held at Wirrabara.

The evening session was opened with a paper, "Large *versus* Small Implements on a One-man Holding," by Mr. W. H. Stevens, of Wirrabara. A paper, "The Farmers' Feathered Friends," was contributed by Mr. P. J. Curnow, of the Wirrabara Branch. The Conference was concluded with a complimentary banquet given by the Laura Branch. The toast list submitted was—"The King," "The Agricultural Interests of South Australia," proposed by Mr. D. Michael (Booleroo Centre), responded to by the Director of Agriculture (Prof. A. J. Perkins); "The Agricultural Bureau," proposed by Mr. A. Woodlands (Wirrabara), and responded to by the Secretary of the Advisory Board (Mr. H. J. Finnis); "The Visitors," proposed by the Mayor of Laura (Mr. F. L. Bunday), and responded to by the Minister of Agriculture (Hon. G. F. Jenkins, M.P.), and Messrs. E. Hollitt (Gladstone), W. Stevens (Wirrabara), H. Michael (Booleroo Centre), A. Lawrie (Nelshaby), G. Wurst (Appila), — Robinson (Crystal Brook); "The Press," Mr. A. M. Dawkins, and responded to by Mr. R. J. Rose (Laura).

## ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, March 7th, there being present Capt. S. A. White (Vice-Chairman), Messrs. A. M. Dawkins, T. H. Williams, W. G. Auld, F. Coleman, L. Cowan, B.Sc. (Agric), and the Secretary (Mr. H. J. Finnis).

Apologies were received from the Minister of Agriculture (Hon. G. F. Jenkins, M.P.), the Director of Agriculture (Professor Arthur J. Perkins), and Messrs. G. Jeffrey, W. S. Kelly, J. W. Sandford, and H. Wicks. The Secretary (Mr. H. J. Finnis) reported that Mr. W. S. Kelly (Chairman of the Board) had suffered a relapse from his recent illness, and on that account was not able to attend the meeting of the Board. On the motion of Mr. T. H. Williams, seconded by Mr. A. M. Dawkins, the Secretary was instructed to send a letter of sympathy to Mr. Kelly, with the wish of the Board that he would make a speedy recovery to good health.

*Crop Competitions.*—In connection with the proposed crop competitions the Secretary (Mr. H. J. Finnis) reported that Branches in the wheat-growing areas had been communicated with in terms of the following letter:—"I beg to advise you that the Minister of Agriculture (Hon. G. F. Jenkins) has expressed his approval to a proposal that an effort should be made to increase the number and scope of crop-growing competitions conducted in this State. The proposal is that Branches of the Agricultural Bureau should be encouraged to come together in groups and work co-operatively in conducting these competitions. A committee has been appointed to assist and advise Branches in this grouping, to render assistance in procuring suitable judges, and to advise and help generally in arranging competitions. It is felt that for the greatest good to be secured from a crop-growing competition, it should embrace as wide an area as soil and climatic conditions, as well as other factors would allow, and that the number of entries should be sufficiently large to ensure adequate competition. It is because of these factors that the grouping system suggested above has been proposed. Before taking further action in the matter, however, I should like to know whether your Branch views the proposal generally as one likely to prove of interest to its members, and to the district in general, and also whether, in the event of competitions being arranged in the district in which your Branch is situated, your members would be prepared to co-operate with neighboring Branches farming under similar agricultural conditions. Please, therefore, bring this matter under the notice of your members at an early opportunity. The remarkable results that have accrued from crop-growing competitions in this and other States of the Commonwealth only serve to emphasise the fact that unless the system is extended wherever possible throughout South Australia, the State will be losing an excellent opportunity of improving agricultural practices, and, ultimately, of increasing production."

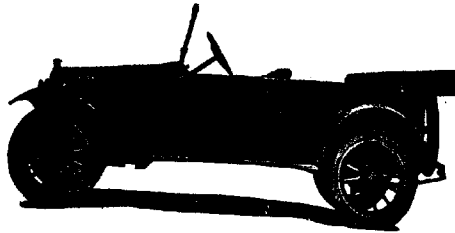
*Pruning Competitions.*—The Secretary of the Board (Mr. H. J. Finnis) reported that he had conferred with the delegates from the Branches of the Agricultural Bureau in the River Murray district in connection with the annual pruning competitions, and that it had been decided to hold competitions at the following centres:—Cadell, June 19th.; Waikerie, June 20th.; Moorook, June 21st.; Renmark, June 26th.; Berri, June 27th. Championship competitions are to be held at either Moorook or Kingston on June 28th.

*Date of Next Meeting.*—It was decided that the next meeting of the Board should be held on Wednesday, April 18th.

*New Branches.*—Approval was given for the formation of Branches of the Agricultural Bureau at Mount Schank and Allandale, with the following gentlemen as foundation members:—Allandale—M. Kieselbach, G. Kemp, M. and B. Conlon, G. and A. Kewkick, H. and R. Kerr, C. C. Griffin, H. Jones, M. Hyde, J. Stewart, A. Smith. Mount Schank—George Kemp, A. Kieselbach, M. Carlin, O. Kekwich, H. Lerr, G. Parish, R. Kerr, G. C. Griffen, H. Jones, M. A. Hyde, J. Stewart, A. Smith, B. Carlin, A. Kekwich, K. C. Hayman, J. P. Mahoney, C. C. Swaffer, A. G. Keane, W. F. Spencer, J. P. Butler, A. Caneanou, F. Ashby, H. Bartlett, J. Davidson, H. F. Carrison, A. Manser, A. F. Stringer, Chas. Dornan.

*Branches to be Closed.*—It was decided to close the Burra and Dawson Branches.

*New Members.*—The following names were added to the rolls of existing Branches:—Collie—B. Wreston. New Residence—H. Ziersch, E. Schier, F. J. Foord, A. Kassulke, J. F. W. Schober, O. Klau, H. Thamm, W. Thamm, T. Arnold, O. Arnold, R. F. Ziersch, W. Schier, O. Ziersch, L. H. Ziersch, J. Tonkin, V. Groeke, G. Gratz, E. W. Schober, E. Konig. Mount Hope—V. Wiadraski. Williamstown Women's—Mrs. R. Schmid, Mrs. A. A. Johnson, Mrs. W. Daly, Mrs. W. T. Kennewell. Darke's Peak—J. H. Dunn, H. B. Stubing. Nelshaby—J. Shepherd. Milang—H. Pearson. Mundalla—H. Warland. Lipson—G. Carr, B. Morris, W. Franks. Windsor—F. Williams, R. N. Ford, sen. Balhannah—B. Borchers, L. Crawford, L. C. Grasby, W. Henderson. Georgetown—W. S. Saunders. Berri—H. F. Preston. Weavers—W. Anderson, H. Nankivell. Crystal Brook—C. Kelly, E. J. Wood, Q. Davidson, E. D. Melville, J. P. Ralph, R. A. McDonald. Morphett Vale—A. Furniss, L. Perry.



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Complete with nickel finish, spare tyre and tube, snubbers; painted any desired shade.

**FULL PARTICULARS FROM**

**PHOENIX MOTOR CO., LTD.,**

**PIRIE STREET, ADELAIDE.**

**DAIRY AND FARM PRODUCE MARKETS.**

A. W. Sandford & Co., Limited, reported on April 1st, 1923:—

**BUTTER.**—During the month of March dry conditions have prevailed throughout the Commonwealth, and unless rains fall early in the eastern States there is likely to be a big shortage in supplies of butter. In South Australia there is still time for good rains and a favorable season, and it is to be hoped that a long rain will fall over the dairying areas. At present the position is that South Australia is very short of top-grade butters, and importations are coming along weekly to supply the demand, but difficulty is being experienced to obtain supplies. Values throughout the month have considerably advanced, and at the close the following prices ruled:—First grade to choicest factory and creamery fresh butter, in bulk, 2s. 0½d. to 2s. 1½d.; prints, 3d. extra; second grades, 1s. 6½d.; best separators and dairies, 1s. 8½d. to 1s. 10½d.; fair quality, 1s. 6d. to 1s. 7d.; store and collectors', 1s. 2d. to 1s. 4d.

**EGGS.**—The quality of this line has improved considerably, and has permitted export trade. This had the effect of firming values. Supplies are showing a seasonable shrinkage, and eggs are becoming scarce, present values ruling being 1s. 6d. for fresh hen, 1s. 7d. for duck.

**CHEESE.**—With the advance in the price of butter, cheese systematically firmed. Nice trade is ruling for both local and export, and the market has been kept well cleared, the range being from 1s. to 1s. 1d. for large to loaf.

**HONEY.**—Although increasing quantities are coming forward, prices have well held, owing to good export orders being booked. Prime clear extracted continues to sell at 3½d. to 3¾d.; second grade down to 2d.; beeswax, 1s. 6d. for good samples.

**ALMONDS.**—Quotations from Sicily have affected values here, and prices have eased in sympathy, and buyers are now operating more freely, Brandis selling at 10d., mixed softshells 9d., hardshells 4d., kernels 1s. 5d.

**BACON.**—Values throughout the month have been very stationary, supplies coming forward being quite equal to trade requirements. Best factory-cured sides selling at 12½d. to 13d.; hams, 1s. 6d.; middles, 1s. 2d.; rolls, 11½d. Lard, Hutton's, in packets, 8d.; in bulk, 7d. to 7½d.

**LIVE POULTRY.**—The penningings during the month have been quite up to the usual heavy quantities of Easter markets. Buyers at each auction have been in full attendance, and competition throughout has been very brisk, and any birds fit to kill have commanded keen competition. The light sorts have met with rather low sales. As good prices are likely to rule, farmers would be wise in sending on their surplus poultry. Crates obtainable on application. The following prices ruled at the last auction of the month:—Prime roosters, 4s. 3d. to 5s. 9d. each; nice-conditioned cockerels, 3s. to 4s. each; poor-conditioned cockerels, 1s. 9d. to 2s. 9d. each; plump hens, 3s. to 4s. each; medium hens, 1s. 6d. to 2s. 6d. each; some pens of weedy sorts lower; geese, 3s. 3d. to 4s. 3d. each; ducks, good condition, 3s. to 5s. each; ducks, fair condition, 1s. 6d. to 2s. 9d. each; ducklings, lower. Turkeys, prime condition, 1s. to 1s. 7½d. per lb. live weight; fair condition, 9d. to 11½d. per lb. live weight; fattening sorts lower; pigeons, 5d. and 6d. each.

**POTATOES.**—There has only been moderate trade passing during the month, but demand improved towards the latter end, due to the local supplies shortening. Values at the close of the month were:—Locals, 8s. to 9s. per cwt.; best Victorians, 9s. to 10s. on trucks Mile End.

**ONIONS.**—These also have been offering very freely, and quotations range from 7s. to 8s. per cwt. on trucks Mile End.

## THE AGRICULTURAL OUTLOOK.

### REPORTS FOR THE MONTH OF MARCH.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective Managers:-

**Booborowie.**—Weather—The weather for March has been very marked for its pleasantness and dryness. Only 15 points of rain was registered, and this only fell over a very few square miles of country. Crops—The lucerne is not making very much growth at present, no doubt due to the lateness of the season combined with exceptionally dry weather. Natural feed is becoming very scarce, even where the grass was not burnt during December. Stock are all in fair condition. Pests—Nothing worth mentioning.

**Kybybolite.**—Weather has been fine and dry throughout, only one point of rain being registered for the whole month, which shows the driest March experienced here since records have been kept, viz., 1906. Also the total for the year (71 points) is the driest so far recorded. Some strong winds have caused much loss of apple crop. Crops—Little preparation has been possible for cereals. Summer crops have ceased all growth. Maize and sorghums under irrigation have ebbled and headed well. Apple picking is in full swing; the crop is good in both quality and quantity. Natural feed—There is still good dry feed available and a fair amount of wireweed.

**Minipa.**—Weather remains very dry, with wind almost constantly from south and south-east. Crops—All farmers hard at work cleaning up new land and ploughing. Some farmers have considerable amount drilled in. Natural Feed—Practically done; not any sign of green even in spear grass. Stock—All in good condition, but have to be hand-fed to keep them so. Pests—A few rabbits putting in an appearance again, but not very numerous. Miscellaneous—All farmers carting water, but long spell of three and a half months without rain is telling on tanks.

### FOR SALE SEED OATS AND WHEAT.

ALGERIAN OATS. -- MORTGAGE LIFTER OATS.

Splendid Sample Free from Barley. Price, 4s. a bushel on Trucks, Tarlee.

KING'S WHITE SEED WHEAT.

GOOD QUALITY.

SAMPLES SUBMITTED ANYWHERE.

MOLINEUX BROS. -- -- TARLEE.



### IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC. FEBRUARY, 1923.

#### IMPORTS.

##### *Interstate.*

Apples (bushels) . . . . .	110
Bananas (bushels) . . . . .	6,601
Mangoes (bushels) . . . . .	1
Passion fruit (bushels) . . . . .	76
Pineapples (bushels) . . . . .	503
Plums (bushels) . . . . .	21
Onions (bags) . . . . .	2,199
Potatoes (bags) . . . . .	11,262
Peanuts (packages) . . . . .	1
Bulbs (packages) . . . . .	40
Plants (packages) . . . . .	18
Seeds (packages) . . . . .	56
Spray pumps (number) . . . . .	38
Wine casks, empty (number) . . . . .	3,776

Fumigated—99 wine casks.

Rejected—102bush. of bananas (over-ripe), 6bush. of pineapples (over-ripe), and 1bush. of mangoes (no fruit fly certificate).

##### *Overseas.*

#### Federal Quarantine Act.

Seeds, &c. . . . . 4,179  
Of these 300lbs. of bulbs and 33lbs. seeds were destroyed.

#### EXPORTS.

#### Federal Commerce Act.

One hundred and forty-five packages of citrus fruit, 4,151 packages of dried fruit, 412 packages of fresh fruit, 35 packages of preserved fruit, one package of jam, and 10 packages of honey were exported to oversea markets. These were consigned as follows:—

##### *London.*

Dried fruit (packages) . . . . .	4,008
Plums (packages) . . . . .	153
Pears (packages) . . . . .	18

##### *United States of America.*

Jam (packages) . . . . .	1
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##### *New Zealand.*

Citrus fruit (packages) . . . . .	145
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##### *India and East.*

Honey (packages) . . . . .	10
Apples (packages) . . . . .	241
Dried fruit (packages) . . . . .	143
Preserved fruit (packages) . . . . .	30
Tomato sauce (packages) . . . . .	5

## RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of March, 1923, also the average precipitation to the end of March, and the average annual rainfall.

Station.	For Mar., 1923.	To end Mar., 1923.	Av'ge. to end Mar.	Av'ge. Annual Rainfall	Station.	For Mar., 1923.	To end Mar., 1923.	Av'ge. to end Mar.	Av'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Madatla.....	—	—	1.90	4.93	Spalding .....	—	0.59	2.26	20.41
ree .....	0.02	0.08	1.47	6.14	Gulnare .....	—	0.47	2.14	19.34
na .....	1.21	1.51	1.77	6.73	Yacka .....	0.03	0.29	1.76	15.45
key .....	0.38	0.49	1.97	8.50	Koolunga .....	—	0.30	1.97	15.87
ana .....	0.36	0.42	2.22	9.05	Snowtown .....	—	0.25	1.90	16.06
man .....	0.08	0.20	2.62	12.61	Brinkworth .....	—	0.86	1.97	16.26
oola .....	0.03	0.03	1.79	7.91	Blyth .....	—	0.37	1.98	16.96
kina .....	0.25	0.65	2.10	13.60	Clare .....	—	0.79	2.72	24.60
ker .....	0.50	0.77	1.91	12.93	Mintaro .....	—	0.54	2.33	23.40
on .....	—	—	2.01	12.56	Watervale .....	—	0.48	2.84	27.44
lon .....	0.38	0.47	2.39	11.60	Auburn .....	—	0.41	2.96	24.30
n .....	—	0.29	2.05	14.24	Hoyleton .....	—	0.10	2.13	17.85
Augusta .....	—	0.07	1.85	9.68	Balaklava .....	—	0.28	2.04	15.91
Augusta West .....	—	0.09	1.67	9.74	Port Wakefield .....	0.02	0.23	2.21	13.29
e .....	—	—	2.05	10.76	Terowie .....	0.10	0.23	2.22	13.78
mond .....	—	0.19	2.12	11.90	Yarowie .....	0.14	0.40	2.26	14.18
ington .....	—	0.08	2.40	18.44	Hallett .....	0.77	1.01	2.00	16.47
rie .....	—	0.18	2.13	12.44	Mount Bryan .....	—	0.42	2.05	16.74
ee .....	—	0.26	3.28	23.88	Koorunga .....	0.01	0.45	2.34	18.08
roo Centre .....	—	0.05	2.16	15.67	Farrell's Flat .....	—	0.24	2.19	18.97
Germein .....	—	0.14	1.97	12.93					
shara .....	—	0.09	2.40	19.85	WEST OF MURRAY RANGE.				
la .....	—	0.74	2.26	15.01	Manoora .....	—	0.32	2.08	18.78
ck .....	—	0.40	1.96	11.50	Saddleworth .....	—	0.46	2.45	19.74
ston .....	0.14	0.29	2.09	12.91	Marrabel .....	—	0.69	2.21	19.97
burg .....	0.03	0.17	1.71	10.85	Riverton .....	—	0.37	2.52	20.71
ia .....	0.09	0.26	2.18	13.56	Tarlee .....	—	0.43	2.25	17.81
oo .....	0.10	0.36	2.43	13.75	Stockport .....	—	0.42	2.19	18.49
urs .....	—	0.08	2.49	11.85	Hamley Bridge .....	—	0.42	2.25	16.62
Rock .....	—	0.94	2.19	12.73	Kapunda .....	—	0.48	2.60	19.85
t .....	—	—	2.29	12.10	Freeling .....	—	0.49	2.33	17.90
orough .....	0.25	0.95	2.29	13.53	Greenock .....	—	0.63	2.49	21.60
la .....	0.27	0.77	2.09	14.51	Truro .....	0.02	0.43	2.45	20.80
LOWER NORTH-EAST.					Stockwell .....	—	0.36	2.41	20.31
ringa .....	0.12	0.12	2.04	8.93	Nuriootpa .....	—	0.36	2.44	20.99
hill .....	0.19	0.23	2.05	8.61	Angaston .....	—	0.25	2.55	22.48
rm .....	0.17	0.24	1.88	8.42	Tanunda .....	—	0.26	2.60	22.20
hill, N.S.W. ....	0.51	0.64	2.18	10.08	Lyndoch .....	—	0.23	2.32	22.88
					Williamstown .....	—	0.39	2.59	27.47
LOWER NORTH.					ADELAIDE PLAINS.				
irie .....	—	0.49	2.01	13.55	Mallala .....	—	0.32	2.12	16.66
roughon .....	—	0.35	1.82	14.27	Roseworthy .....	—	0.62	2.16	17.29
na .....	—	0.04	1.84	15.80	Gawler .....	0.09	0.46	2.37	19.09
ie .....	—	0.51	2.25	18.25	Two Wells .....	—	0.31	2.02	15.83
own .....	0.04	0.59	2.26	17.19	Virginia .....	—	0.48	2.18	17.31
eer W. Wks. ....	0.16	0.97	2.20	17.86	Smithfield .....	—	0.37	2.23	17.16
ne .....	—	0.41	2.13	18.05	Salisbury .....	—	0.84	2.34	18.45
Brook .....	0.03	0.73	2.03	16.22	North Adelaide .....	—	0.69	2.58	22.22
own .....	—	0.22	1.99	15.93	Adelaide .....	0.03	0.80	2.42	20.06
own .....	—	0.24	2.24	18.50	Glenelg .....	0.03	0.72	2.28	18.37
t .....	—	0.26	2.07	16.43	Brighton .....	0.02	0.69	2.62	21.34
	—	0.81	2.08	16.93	Mitcham .....	0.02	0.81	2.49	24.06
					Glen Osmond .....	0.06	1.04	2.65	25.78
					Magill .....	—	0.92	2.81	25.24

## RAINFALL—continued.

Station.	For Mar., 1923.	To end Mar., 1923.	A'v'ge. to end Mar.	A'v'ge. Annual Rainfall	Station.	For Mar., 1923.	To end Mar., 1923.	A'v'ge. to end Mar.	A'v'ge. Annual Rainfall
MOUNT LOFTY RANGES.					WEST OF SPENCER'S GULF—continued.				
Teatree Gully .....	0-02	1-00	3-02	27-65	Talia .....	—	0-40	1-31	14
Stirling West .....	0-05	1-31	4-40	46-59	Port Elliot .....	0-05	0-46	1-36	14
Uraidla .....	0-01	1-15	4-26	43-92	Cummins .....	0-08	0-33	1-27	14
Clarendon .....	—	0-65	3-46	32-98	Port Lincoln .....	—	0-36	1-96	14
Morphett Vale .....	—	0-64	2-63	22-79	Tumby .....	0-02	0-52	1-57	14
Noarlunga .....	0-01	0-55	2-30	20-35	Carrow .....	—	0-33	2-04	14
Willunga .....	—	0-51	2-73	25-89	Arno Bay .....	—	0-54	1-95	14
Aldinga .....	—	0-56	2-34	20-35	Cowell .....	—	0-35	1-93	14
Myponga .....	0-12	1-16	2-74	29-16	YORKE PENINSULA.				
Normanville .....	—	0-64	2-14	20-81	Wallaroo .....	0-01	0-60	1-69	14
Yankalilla .....	0-05	0-74	2-55	23-10	Kadina .....	—	0-06	1-93	14
Mount Pleasant .....	—	0-42	2-79	27-16	Moonta .....	—	0-32	1-46	14
Birdwood .....	—	0-43	2-95	29-33	Green's Plains .....	—	0-28	1-79	14
Gumeracha .....	0-02	0-85	3-21	33-29	Maitland .....	0-02	0-60	2-05	14
Millbrook Reservoir .....	0-02	1-02	—	—	Ardrossan .....	—	0-74	1-75	14
Tweedvale .....	—	0-55	3-12	35-55	Port Victoria .....	0-03	0-73	1-74	14
Woodside .....	0-03	0-58	3-09	32-11	Curramulka .....	—	0-53	2-02	14
Ambleside .....	—	0-55	3-28	34-67	Minlaton .....	0-02	0-57	1-87	14
Nairne .....	—	0-40	3-22	28-42	Brentwood .....	—	0-31	1-81	14
Mount Barker .....	0-03	0-81	3-34	31-18	Stansbury .....	—	0-49	1-88	14
Echunga .....	—	0-62	3-40	32-96	Warooka .....	—	0-55	1-67	14
Macolesfield .....	0-02	0-59	3-20	30-57	Yorketown .....	—	0-38	1-71	14
Meadows .....	—	0-74	3-66	36-04	Edithburgh .....	—	0-58	1-88	14
Strathalbyn .....	—	0-28	2-48	19-32	SOUTH AND SOUTH-EAST.				
MURRAY FLATS AND VALLEY.					Cape Borda .....	0-03	0-67	2-06	14
Menzie .....	0-01	0-57	2-13	18-66	Kingscote .....	—	0-35	1-82	14
Milang .....	0-01	0-34	2-05	15-40	Penneshaw .....	—	0-33	2-08	14
Langhorne's Creek .....	—	0-29	1-99	14-61	Victor Harbor .....	—	0-47	2-49	14
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Murray Bridge .....	0-03	0-26	2-15	13-93	Pinnaroo .....	—	0-21	2-71	14
Callington .....	—	0-19	2-18	15-42	Parilla .....	—	0-10	1-78	14
Mannum .....	—	0-23	1-90	11-64	Lameroo .....	—	0-37	2-06	14
Palmer .....	—	—	2-16	15-47	Parrakie .....	—	0-36	1-87	14
Sedan .....	0-02	0-05	1-92	12-29	Geranium .....	—	0-57	2-03	14
Swan Reach .....	—	0-15	2-04	11-09	Peake .....	—	0-60	2-64	14
Blanchetown .....	—	0-04	1-87	10-16	Cooke's Plains .....	0-07	0-64	2-67	14
Eudunda .....	0-12	0-91	2-25	17-54	Coomandook .....	—	0-56	2-15	14
Sutherlands .....	0-16	0-31	1-63	11-19	Coonalpyn .....	—	0-79	2-06	14
Morgan .....	—	0-27	1-53	9-30	Tintinara .....	—	0-61	2-12	14
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Overland Corner .....	—	0-02	2-02	11-07	Bordertown .....	—	0-42	2-24	14
Loxton .....	—	0-24	2-83	12-63	Wolseley .....	—	0-41	1-98	14
Renmark .....	—	0-02	2-04	11-09	Frances .....	—	0-53	2-25	14
WEST OF SPENCER'S GULF.					Naracoorte .....	—	0-66	2-43	14
Eucula .....	0-03	0-84	2-34	10-02	Penola .....	0-09	1-02	3-16	14
White Well .....	—	0-20	1-43	9-08	Lucindale .....	0-04	0-64	2-31	14
Fowler's Bay .....	0-01	0-89	1-38	12-16	Kingston .....	—	0-98	2-46	14
Penong .....	0-14	0-23	1-64	12-49	Robe .....	0-01	0-91	2-30	14
Ceduna .....	—	0-38	1-37	10-36	Beachport .....	0-01	0-45	2-93	14
Smoky Bay .....	0-02	0-54	1-40	—	Millicent .....	0-05	1-03	3-26	14
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\* No report received during the month of March.

† Held over until next month.

‡ Formal.

## THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

### REPORTS OF BUREAU MEETINGS.

#### UPPER-NORTH DISTRICT.

##### (PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).

March 1st.—Present: 11 members and five visitors.

**SAVING TIME ON THE FARM.**—A member read a paper on this subject from the *Journal of Agriculture*, and in the discussion that followed Mr. B. Murphy agreed with the writer of the paper regarding the advisability of tightening bolts on new implements, but so far as wire gates were concerned he considered they effected no saving of time, especially where there was much traffic. A stringy-bark gate would be more serviceable, and could be made for about £1. Mr. S. Stone considered an iron gate by far the best. Mr. A. J. Henschke considered any form of gate useful so long as it was well made and properly swung. Members generally considered that a poor class of gate was a temptation for anybody to leave it open, whilst some gates were nothing more than a barbed-wire entanglement. Mr. S. Stone preferred having the harness stitched rather than repaired with rivets. Wire was a very necessary article for temporary repairs, but it should only be used as such.

**TARCOWIE, February 27th.**—Under the auspices of the local Branch of the Agricultural Bureau a well-attended field trial was held at Tarcowie. The ordinary monthly meeting of the Branch was held in the evening.

#### MIDDLE-NORTH DISTRICT.

##### (PETERBOROUGH TO FARRELL'S FLAT.)

BEETALOO (Average annual rainfall, 23.50in.).

March 6th.—Present: 13 members and visitors.

**HAY AND HAY MAKING.**—The following paper was read by Mr. A. G. Bartram:—"No hard and fast rule can be laid down as to the varieties of wheat which should be grown for hay, because some wheats which are a success in one district are not always profitable in others. The best wheat for home use in this district is Marshall's No. 3. For commercial purposes I advise growing King's Early. The best time to cut wheaten hay is just after the flower has fallen. The straw will then be white for about 3in. above the bottom knots. This will leave the first part of the stem a bright golden yellow, the balance being a dark green, and there will also be sufficient grain in the head to make a good sample. If the area to be dealt with is large, the grain in the last portion of the crop which is cut will be found well advanced, thus the grower secures both weight and color. The hay should be stooked immediately after it has been cut, so that it will keep its color. Hay cut too green is liable to scour the stock, but

when cut at the proper time there is no danger of this. Some farmers prefer oaten hay to wheaten, but I do not consider it to be nearly so good. Oats have to be left until nearly ripe before being cut. If they are cut green the hay is bitter, and stock will not eat it. The main point in cutting good hay is to see that the machines are in thorough working order. Cutting should be commenced a day too soon rather than a day too late. A hot, windy day at the time when the crop is ready to cut will reduce the yield by 3cwts. to 4cwts. to the acre. Hay land should be rolled, so that the crop can be cut close to the ground and the yield per acre considerably increased. For quick carting I prefer the stooks, four sheaves deep; two in the centre and one on either side; bringing the heads to a sloping position. This will stand a heavy fall of rain without damage to the hay. To make a success of this method the work must be done with the hands. The two end sheaves must be well closed in to prevent the wind overturning the stook. When the hay has to remain in the fields for any length of time the round stooks are the best, but care must be taken not to make them too large, because in case of rain a considerable portion of the middle sheaves will go black because the air cannot get at them. Stacking can be started 12 to 14 days after cutting the crop. This, of course, depends on the weather at the time of cutting. If the cutting is done during hot, windy weather, the hay will be ready for carting much sooner than that cut in mild, damp weather. All stacks should be placed on a good bed of straw, about 14in. to 18in. deep. The sheaves should be placed butts out, keeping the middle about 3ft. above the sides. This will give the sheaves a good dip, so that the rain will not run into the middle of the stack. Finally, the stack should be covered with a good layer of straw."

BLYTH (Average annual rainfall, 16.46in.).

February 10th.—Present: 15 members and visitors.

HARVEST REPORTS AND THE BEST WHEATS FOR THE DISTRICT.—The following paper was read by the Hon. Secretary (Mr. A. L. McEwin, jun.):—"Whilst engaged in harvesting operations, which have so recently been completed, several questions arose in my mind which I considered might be dealt with at the Bureau. I wish to mention the following list as points worth considering:—(1) Take-all (2) smut, (3) seed selection, (4) the combine and the drill, (5) the best average wheat of the last five years, (6) a recommendation as to varieties to sow. All of these points must have had the earnest thought of every progressive farmer to some extent while gathering the grain and making preparation for the approaching seeding. The majority of farmers have, at one time or another, had to deal with take-all, bunt, flag smut, bad seed, and other detrimental factors to efficient wheatgrowing, and one has only to make inquiries for seed wheat to find out the many complex questions that confront the wheatgrower. (1) Take-all has appeared in recent years to such an extent that the disease cannot be treated lightly, and many bogus arguments have been heard as to its cause and prevention. The researches of scientists have proved that the disease is a fungus growth living on the stem of the plants, and that infection is most likely brought about in the soil by the ploughing in of affected plants. I have always considered late fallow a factor that assisted the development of take-all, and I find this supported by Mr. W. J. Spafford (Superintendent of Experimental Works). [See p. 532, January, 1923, *Journal of Agriculture*.] Briefly, his preventive measures are as follows:—Burn the affected stubble, work the fallow well, and keep off the weeds, and, if necessary, grow oats on the affected land for a few seasons. Oats are not readily attacked by the fungus, and will assist in starving the disease out of the land. (2) Smut, in a number of cases, was much in evidence, and from inquiries I find Federation the most affected variety. It is unnecessary to advocate pickling, which is quite the custom in this district. There are different methods of pickling, but for efficiency I favor the old method of shovelling. One pound of bluestone to 10galls. water will be sufficient for 12bush. to 15bush. of seed. I cannot claim immunity from smut, because in Federation this year it was very bad. I am of the opinion, however, that it was due, to some extent, to pickling on the dry side, and sowing the grain within

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a week of pickling and in wet weather. I introduce the subject of seed selection on account of the gradual rise in the list of bad weeds getting a grip on many of the holdings. Do not procure seed from a farmer who has turnip, star thistles, drake, barley, nancy, &c., growing in his wheat. It is always a wise plan to have a knowledge of the crop and land from which the seed is to be obtained. In addition, I recommend the use of a grader of the best type, which will produce an even and clean sample, as a decided reinforcement to careful seed selection. The combine and the drill are still drawing comparisons, the former increasing its popularity mainly as a labor saver. During the years this machine has been in use, I believe it has been a decided success. The crops come through well, and I believe in a better and healthier condition than when the work is performed with the ordinary drill. This is, no doubt, due to the grain being placed on to the seed bed, and also because there is not so much 'boggling in' as is sometimes the case in wet sowing. Farmers have still, however, to test the combine in a seeding such as was experienced in the years 1912 and 1913, when they waited patiently for up to 13 weeks, and then saw a good germination following the drill. On the other hand, I do not think the percentage of take-all will be so much in evidence in seasons like the one just passed when the combine is used. By better pulverising the soil and obtaining a healthy growth at the beginning, the plant is better able to resist attacks of disease. Regarding the best average wheat for this district during the last five years, there may be difference of opinion, but I do not think any variety has stood the test of time better than Federation, and for early wheat King's Red. More recent varieties which could be brought in under the five-years' average are Golden Return, Bluey, and Currawa. In considering the question which varieties I would recommend to sow, there can be no doubt that it is not advisable to sow all the crop with the best average wheat. How disastrous would it have been to have sown, say, 1,000 acres of King's Early in 1921, when the red rust played havoc, and would it not have been equally disastrous to have had the same area of Golden Return, and experience such rough weather as that of last Christmas? In variety selection we should give and take, for what may give a bumper crop one year may fail the next, and we cannot preconceive the results. A division of late, mid-season, and early wheats is both an advantage at seed time and harvest. If sowing becomes late it is better to have early wheats, and the late wheats can be sown early, as they will stool out and not run up like most early wheats. I recommend the following varieties and the relative proportions of land that should be devoted to each type:—Golden Return and Bluey, 40 per cent.; Federation, 25 per cent.; Red Russian, 15 per cent.; King's Red, 20 per cent. If Major is desired, then I would place that in with the 40 per cent. quota, and either reduce the quantities of Bluey and Golden Return, or substitute it in place of either variety. I would not reduce the quantity or proportion of Federation for any other variety yet known. The percentage of Red Russian may be substituted by Currawa, as that portion should be allocated to a wheat able to withstand to some extent bad weather more than the preceding kinds mentioned. King's Red, 20 per cent., would make provision for a good-quality hay wheat, and enable the binder to make an early start, which will also allow more time for hay carting, and enable the harvester to commence work before the other wheats are properly matured. Early Gluyas would also answer the purpose, and, I believe, is favored on the plains."

BOOLEROO CENTRE (Average annual rainfall, 15.83in.).

February 23rd.—Present: 11 members.

POINTS FROM THE 1922-23 HARVEST.—Mr. W. Wibley, in opening a discussion on this subject, said one of the lessons to be learned from the past season was that farmers should wait for rains before seeding. When rain had fallen the crop should be put in without any loss of time. He advocated the combined cultivator and drill as a big factor in accomplishing that work, and favored the selection of seed suitable for the particular requirements of the farm. Mr. L. Michael said the tough wheats should be reaped first, so that they would be taken off, if possible, before rain. Mr. A. Wibley mentioned that he had a lot of black

rust in his crop, which he attributed to working the fallow whilst it was in a dry condition after harvest. Mr. C. W. Paterson said early dry sowing would not stand a dry spring half so well as late sowing put in wet. Mr. H. D. Michael said that the rainfall was very erratic during the growing period of last year. He favored waiting for rain. Currawa, Federation, and Red Russian were the best wheats he had grown. Experience showed that superphosphate was the best manure for that district.

#### NELSHABY.

February 24th.—Present: eight members and visitors.

**TOMATO CULTURE.**—In the course of a paper dealing with this subject, Mr. M. Aniels said one of the main features connected with tomato culture was to see that good seed was saved from tomatoes of the first quality. Next, a seed bed that had been well manured and thoroughly cultivated should be selected, in order to allow the young plants to break through the ground evenly and undamaged. It was a good plan to thin out the young plants from 2in. to 3in. apart, so that they would make rapid development, and become firm, sturdy, and healthy seedlings. Before transplanting, care should be taken to prepare the ground into which the young plants were to be set out. The ground should be well dug to a depth of at least 12in., and turned over two or three times before planting, to allow the air to penetrate into the soil and freshen the ground. Trenches 3in. or 4in. deep and 3ft. to 4ft. apart should be made and watered prior to the planting of the seedlings. The young plants should be set out when 3in. or 4in. high, a cool day being chosen for the work. When planting out, the plants should be placed 3ft. to 4ft. apart in rows. A small quantity of super should be placed near the plant, which should then be well watered in order to enable the roots to make a firm grip of the ground. The ground should be kept in a friable condition, and for that he recommended cultivating between the rows with a garden cultivator or hand hoe. When the plants reached the flowering stage it was advisable to give them a heavy pruning, to induce the early setting of the flowers. It was advisable to continue pruning to prevent the laterals from taking the nourishment from the fruit. When the plants had set a good quantity of fruit they should be given plenty of water, and the ground should be kept in a moist condition. A good method to adopt to force on a crop of early tomatoes was to sprinkle the soil with sulphate of ammonia, and hoe it in around the roots of the plants. A good discussion followed.

**NARRIDY, March 3rd.**—Several subjects of local interest were brought before the meeting, and an interesting discussion ensued.

**NORTH BOOBOROWIE, March 8th.**—Mr. A. H. Codrington (Wool Instructor of the School of Mines) attended the meeting and delivered an address.

**REDHILL, March 6th.**—The business of the evening was devoted to a discussion on the reports tendered by members on the 1922-23 harvest season.

#### LOWER-NORTH DISTRICT.

(ADELAIDE TO FARRELL'S FLAT.)

CLARE (Average annual rainfall, 24.30in.).

January 13th.

**HOMESTEAD MEETING.**—A homestead meeting was held at the garden of Mr. J. C. Dux, Stanley Flat, on January 13th. After light refreshments the members and visitors inspected the garden under the guidance of the Messrs. Dux.

**PREPARATIONS FOR THE FRUIT HARVEST.**—A further meeting was held on February 2nd, when the following paper was read by Mr. C. T. Jarman:—“To get best results all farm and garden operations require a little forethought and

preparation. To those who may be just starting the fruit harvest and have had little or no chance of previous experience, these notes may be of some little use. Let me say at the outset, however well we may plan and prepare, there will always be some little thing which we will find wanting at the last moment. A few questions which we may ask ourselves and see that we can answer in the affirmative are these:—Have we a good supply of tray room, drying space, and cleaned surfaces on which to spread trays. Picking buckets, boxes, sweats, caustic soda, sulphur and sulphur box, and a good dry mouse-proof shed; and last, but by no means least, a market for the finished article. I will try to deal with the foregoing in this order. *Drying Space or Tray Room.*—To dry 1 ton of currants requires about 224 wooden trays, 4ft. 6in. x 2ft., filled once. In a good drying season these are often filled a second time. *Shed or Rack.*—About 1,100 square ft. of netting is required to dry 1 ton, and only one filling can be relied upon. The surface required in shed or rack to dry 1 ton is less than that on trays, because the rack can be loaded more thickly. Wire-netting trays require about the same surface area as the rack, but can often be filled twice in a season, because it may be possible to expose them to the sun on suitable days. *The Drying Ground.*—A square chain will accommodate 224 wooden trays. Burn off the grass as soon as it is dry, and the wind will sweep the ground clean before it is required, and most likely a shower will start the grass, which later dies down and forms an ideal drying ground. Too much dry grass holds the night dews, besides being dangerous on account of fire. *Pickling Buckets.*—Petrol tins make a splendid bucket. No. 6 wire can be used as a handle, but rounded hoop iron is very much better and more comfortable to carry. If the hoop iron is bent square and fastened with  $\frac{1}{2}$ in. gutter bolts to the outside of the tin, the handle will fall back out of the way when the bucket is in use. A lot of damage is often done to good fruit by filling the buckets too full, and bumping on to the ground while filling, thereby breaking the berries, which retards the drying and results in sticky currants. *Boxes.*—Clean petrol boxes are very handy for stowing dried currants or other fruit away until ready for cleaning or the packing shed, because they stack closely and occupy little space. These cases should be gone over and nailed up tightly so that the currants will not leak through. They should also be placed in a handy stack ready to use. These boxes will hold roughly  $\frac{1}{2}$ cwt. of uncleaned currants. *Sweat Boxes.*—These can be obtained by growers from the Clare Branch of the A.D.F.A. It will require about 16 to hold a ton of currants off trays. *Caustic Soda for Sultanias and Prunes.*—Each ton of fruit takes about 5lbs., and it is a good plan to buy 1lb. tins, because it is very handy to have it weighed ready for use. The cost is 1s. 2d. per lb. *Sulphur for Prunes, Apricots, Peaches, and Pears.*—About 1lb. for every 40 trays of fruit. A few days before the fruit is ready for picking, take the trays out of the shed or stack to the drying ground and place them in stacks, say about 18 trays in each. This saves time when the fruit is ready. Cover each stack with a 5ft. sheet of galvanized iron. *Shed.*—A good clean shed, free from dust, is very necessary, and should either be made mouse-proof or a stand erected, which may be made on a raised platform, about 2ft. 6in., with supports tinned on the top and under the floor to keep mice off. *Markets.*—This is the most serious problem which we have to face. Personally, I believe nothing but co-operation can save the dried fruits industry from going back, and an institution like the A.D.F.A. should have the wholehearted support of every fruitgrower in the State. Further, every grower should endeavor by every possible means to raise the quality of his dried fruit. I should like to stress this point, because every one knows there is always plenty of room for tiptop quality, and it will pay handsomely to feed all inferior and damaged fruit to pigs. Competition will in future be more keen than ever before. New markets will have to be opened. See to it that the fruit that leaves your shed is the best you can turn out, and to secure this go to no end of trouble to attend to every detail which will make for that end. A good idea to keep in mind is this—“Poor fruit does not improve by drying.” In the discussion that followed Mr. F. J. Knappesteik asked what was the best material to construct a sulphur box off? Mr. Jarman, in reply, stated that he found that one made of a light wooden framework and covered with maltoid, and of a size to hold about 20 trays, most satisfactory.

The quality and quantity of sulphur to use for different fruits was also discussed. Mr. Hamlyn wondered whether the sulphur candle would be of any use. The candle was similar in style to stick sulphur, and of about 1lb. in weight, and had two wicks in it. The sulphur candles at one time were used by the Railways Department for fumigation purposes. The opinion was varied, but members thought that if the candles could be procured experiments could be carried out to test them.

NANTAWARRA (Average annual rainfall, 15.90in.).

March 1st.—Present: eight members.

**MOUSEPROOFING HAYSTACKS.**—Mr. C. G. Nicholls, in introducing a discussion on this subject, dealt with the mouseproofing of a 100-ton stack, which would cost about £16. He suggested corrugated iron, with jarrah uprights. The iron should be placed 5in. into the ground, and a piece of timber placed around on top of the iron to protect it from falling sheaves. It was advisable to place the iron in position before starting to build the stack. The provision of sticks placed against the iron on the inside would enable any mice that were carted in with the hay to climb out, because it was known that mice had a habit of coming out of the haystack at night. The matter was discussed freely, members views being similar to those of the first speaker. It was thought that the iron should be set in concrete. It was generally agreed that the cost of making the stack mouseproof would be made good in the saving of hay that would be effected.

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## TARLEE.

March 6th.—Present: 22 members and three visitors.

**HARVEST REPORTS.**—In the course of a paper on this subject, Mr. A. L. Molineaux said that on the whole the harvest for the past season gave good average returns. The sample of grain was very good, as was shown by the standard being fixed at 62½lbs, the wheat in this district weighing as high as 67lbs. to the bushel. The barley crops throughout the State were not too heavy, although some big yields were obtained. The sample generally was not so good as last year, and buyers were finding it difficult to do export business. The oat crop was light in many of the oat districts, owing to the excessive moisture in the winter months. The season, from an agricultural standpoint, was not an ideal one. The opening was excellent, and in April and May 4½in. of rain were received, but the winter months (June, July, and August) were very wet. The excessive rain showed its effects on the crops, and seeding right through the State was hindered by the wet conditions, and in all the late sown crops weeds were much in evidence. The past season had shown that the cultivator and drill, worked as separate implements, did far better work in unfavorable conditions than the new combined implement. The outstanding feature of the year was the success which attended the sowing of the varieties of wheat Zealand Blue and Turvey. These wheats gave excellent returns, both for wheat and hay. Federation and Major also gave good yields for wheat. The quantity of useful rain gauged, April to November inclusive, totalled 15.32in. Mr. Molineaux then gave a detailed account of the working, quantities, and varieties of seed wheat and super sown to the acre on the various plots on his farm. Mr. M. D. Badman also gave a description of the most outstanding features connected with the growing of wheat and other cereal crops in the Tarlee district.

## TWO WELLS (Average annual rainfall, 16.36in.).

February 8th.—Present: six members.

**TRACTORS ON THE FARM.**—In the course of a paper dealing with this subject Mr. S. C. Verner said the arguments advanced against tractors to-day were similar to those advanced years ago against superphosphate, seed-drills, and harvesters. The tractor on the farm was by no means an experiment; it was used extensively on farms in America and other large agricultural countries and had proved a success. The results of an inquiry in America among farm tractor owners in several of the southern States had lately been made public by the United States Department of Agriculture. The inquiry was undertaken for the purpose of ascertaining to what extent tractors had been used profitably by farmers in those States. Replies were received from 684 farmers, all of whom purchased their tractors between March, 1918, and September, 1920. The advantages were reported to be:—(1) Saving of time and labor, ability to do a large amount of work in a short time and perform field operations at the most opportune time. (2) Better work, including deeper and better ploughing and better preparation of the soil after ploughing; this is a valuable aid in securing the maximum crop yields. (3) Horses were relieved of hard work, especially in the hot weather. The tractor was considered a very convenient source of power and belt work on the farm. Actual expense in farming operations was reduced by one-third. These 684 tractors were used on farms of from 75 acres upward, the average being 290 acres. Reports of harvesting done in these States by tractors showed that in 98 per cent. of the instances where they were used to pull harvesting machines, work was done more quickly, more economically, and with better results, the steady pull of the tractor having the advantage of giving a better sample of wheat as compared with horses, and there were fewer repairs to the harvesting machines for the same reason. It should pay to use a tractor on a farm over 200 acres. On a farm of 600 acres, about 300 acres could be put under crop each year, because a smaller area could be left out for grazing if horses were not used to work the land. On a farm of that size about 40 acres were left out for the horses and another 50 acres put under crop to feed the horses during the busy time, and thus about one-sixth of the farm was

used to feed the horses. The 50 acres of crop should more than pay for the fuel that a tractor would use in preparing the soil, and in seeding and harvesting. The 300 acres and the other 40 acres that were left out for feed could be put under fallow. During seeding time one farmer could do up to 40 acres a day with a tractor, but it would take five men and 32 horses to do the same work. If a farmer drilled in his crop with horses he rose at 5 a.m., fed and brushed the team, and was seldom working in the paddock before 7.30 a.m. He left the paddock again at 11.30 a.m. for lunch, and was seldom hooked into the drill again before 1.30 p.m. He then often worked until dark. The farmer then had to take the team home, unharness and feed them, and was not finished with the horses until 9.30 p.m. About six or seven hours a day were spent in feeding, brushing, and harnessing the horses and walking to and from the paddock. About eight hours were spent in actual seeding. With a tractor, a farmer could almost go straight to work in the morning, and, if necessary, work all day. He would have the advantage of being able to work longer days if the land was working well; that he could not do with horses. In their district one man had put in 40 acres of seed in one day, at a total cost of 1s. per acre for cultivating, drilling, and harrowing. The actual cost of feeding horses to do a similar amount of work would be greater. A farmer had to feed and water his horses 365 days of the year, whereas a tractor was only fed when it worked. The cost of ploughing with a tractor was about 1s. 2d. per acre; cultivating, 7d. per acre; cultivating, drilling, and harrowing at seed time could be done for about 1s. per acre. Such work could not be done for the same price and as quickly with horses. The tractor could also be used as a power plant for cutting chaff, sawing wood, or pumping water.

LONE PINE, March 6th.—The meeting took the form of a question box, when various items of local interest were discussed.

LYNDÖCH, March 1st.—Arrangements in connection with the forthcoming Conference were discussed, after which several questions were asked and answered.

OWEN.—The business of the ordinary monthly meeting held on March 2nd was confined to a discussion on matters relating to the forthcoming Conference of Lower Northern Branches, to be held at Williamstown on April 19th, and the advisability of inaugurating crop competitions.

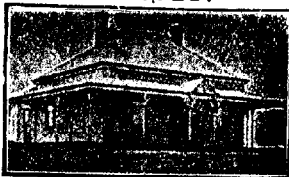
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**HEAD OFFICE:**

PARADE,  
NORWOOD.

**SADDLEWORTH** (Women's), March 13th.—One of the members read an article, "Domestic Economy," which aroused a keen and animated discussion. The delegates were appointed to attend the Conference of Lower North Branches, to be held at Williamstown on April 19th.

**SALISBURY**, March 6th.—The ordinary monthly meeting took the form of a "Question Box," when various questions were brought before the meeting for discussion.

**STOCKPORT**, March 9th.—Mr. R. Whitelaw gave an address, "The Threshing Plant v. Harvester and Reaper Thresher," and an interesting discussion followed.

**WATERVALE**, March 5th.—Several subjects of local importance were brought before the meeting, and an interesting discussion followed.

**WILLIAMSTOWN** (Women's), February 15th.—Mrs. Wilde read an interesting paper, "Life," and illustrated her remarks with the aid of a microscope.

A further meeting was held on March 7th, when members exchanged fruit recipes. A programme of meetings for the year ending July 4th was also arranged.

**WILLIAMSTOWN**, March 23rd.—Mr. M. S. Wilkin read a paper, "Mixed Farming," and an interesting discussion followed, in which the following members took part:—Messrs. Powell, L. Hanumatt, A. Norsworthy, J. Howarth, and W. Smith.

**WIRILLA**, March 3rd.—Mr. Hannaford, who had recently returned from an eight months' tour of the United States of America, delivered an interesting address, "Agricultural Practices in the United States of America." In reply to a question, Mr. Hannaford said motor tractors were used very extensively in America, but he did not think they could be worked profitably in Australia until there was a considerable reduction in the price of fuel.

## YORKE PENINSULA DISTRICT.

(TO BUTE.)

### BRENTWOOD.

February 8th.—Present: 20 members.

**HARVEST REPORT.**—Mr. J. J. Honner, jun., contributed the following paper:—"The opening of the season was not favorable from an agriculturist's point of view, the rains during the early part of May were light and patchy, instead of a general heavy fall, which is so essential for seeding operations. In some instances it was risky to sow until about the end of May, owing to the soil being neither wet nor dry, and in many cases crops that had been sown had to struggle to come through evenly, thereby resulting in a weakly plant. The light rains also allowed a portion of the weeds to remain in the soil until later in the winter, when they came up to the disadvantage of the crops. From seeding time until spring the rains were light, and at times caused anxiety to farmers. During September and early October matters improved as compared with the opening of the season. From the middle of October to early in November very unseasonable weather was experienced, heavy frosts, extreme heat, and snaps of cold bleak weather being responsible for the pinched and flinty barley. Many people looked upon the extreme heat of October 24th as being responsible for the poor quality grain, whereas others thought that the frosts and cold bleak weather which followed assisted very much to bring about the disaster. The financial result of the harvest was fairly satisfactory. Wheat sold at 4s. 9d., oats 3s., and barley, the main product of this district, from 2s. 6d. to 3s. 8d. Dealing with yields in rotation as harvested, some farmers cut heavy hay crops of King's White, returning up to two and a half tons and three tons per acre. Other crops yielded about one ton to one and a half tons to the acre, which, I think, can be taken as the average for the district. Many farmers prefer King's White for hay because it matures before the barley crops are ready to harvest. Others prefer Algerian oats. The latter, however, are now very scarce in this district, unless

grown for hay, there being only about 1,000 bags received at Milnacowie this season. The yield of barley per acre was not up to many of the results of former seasons, and although some growers reported up to 30bush. from fallow and laid down land, the rotation crops obtained from stubble land would, I think, bring the average back to about 18bush. In my opinion, the earlier crops of barley generally yielded the best samples, owing to their having been fairly well advanced before the unseasonable weather overtook them, and many other crops that appeared to stand that very hot day in October resulted in a very inferior sample. Pryor's is the chief variety of malting barley grown in this district. It may safely be looked upon as the best to grow. The wheat crops taken on the whole yielded quite up to, if not better than expectations. The yield for this district was about 15bush. to the acre of good, sound, plump, milling wheat. Regarding the best varieties to grow, last season Ford yielded well with one or two farmers who had introduced it into the district, and we were induced to try it, and out of four different wheats it gave the lowest return, other kinds were South African, Smut Proof, and Currawa. This year we intend to try Currawa, Nugget, and Smut Proof, and give them preference in the order named. Nugget has recently sprung into favor because it yielded 36bush. per acre in one instance, which I believe establishes a record for this season. Currawa is the best wheat for this district, with Major, Gluyas, and Smut Proof next. Some farmers still grow Red Russian, but I believe they would be well advised to try a different variety, because it is not smut proof." During the discussion which followed, Mr. J. Boudy said he agreed with the paper generally, but he found that the success of any particular variety often depended on climatic conditions, and in that respect some parts of the district had more rain than others. He did not favor Currawa wheat, because the returns had been consistently poor. His best wheat last harvest was Federation. The best milling wheats, without mixing, were Florence, Marshall's No. 3, and Yandilla King. Mr. A. L. Vanstone preferred the early

## Farmers and Others

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wheats. He preferred Triumph, both in respect to grain and as a hay wheat. Mr. F. J. Nation had found Florence, a smut-proof variety, to be an excellent wheat, both as regards yield and weight, and in addition it was an excellent hay wheat. Mr. J. J. Honner, sen., thought more attention should be given to the growing of hard wheats to cater for the overseas market. Mr. A. E. Swartz thought that very soon the Algerian oats would be supplanted by earlier varieties. He cited a case where the Scotch Grey variety was ready 10 days earlier than Algerian, and yielded a much better crop.

KILKERRAN, February 27th.—Matters in connection with the conference of Yorke Peninsula Branches were brought before the meeting, and several other subjects of local interest were also discussed.

MOONTA, March 3rd.—Mr. A. B. Ferguson read a paper from the *Journal of Agriculture*, "Is the Growing of Barley and Oats after Wheat Profitable?" A good discussion followed, in which all members took part.

WEAVERS, February 26th.—A paper, "How to Make Money," was read by Mr. A. E. Anderson. Several other matters, including "Crop Competitions," and the forthcoming Conference of Yorke Peninsula Branches, were brought forward for discussion.

## WESTERN DISTRICT.

### DARKE'S PEAK.

February 28th.—Present: 14 members and visitors.

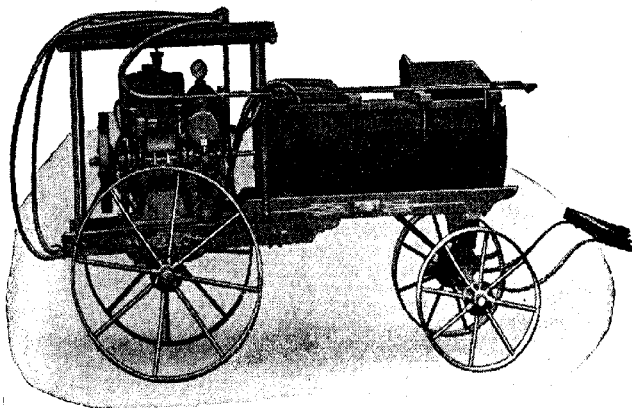
BEST METHOD OF KILLING MALLEE SHOOTS.—The following paper was read by Mr. H. H. Noble:—"The best way to kill mallee shoots is with fire. Fire has several advantages, (1) it hinders the growth of shoots; (2) it destroys the eucalyptus in the mallee that is so detrimental to the wheat; (3) it sweetens the soil; (4) kills fungus growths such as bunt, rust, &c., and insects that are detrimental to the crops. In the first place a good scrub fire over the logging is a great factor in the success of the future destruction of shoots. After the crop is taken off the stubble should be fed off and trodden down with stock. A set of harrows can be used for knocking the straw down, and if they are allowed to fill with straw and then dragged over the stubble they will flatten the straw and cover the seed, and enable the fire to get to the crown of the stump. If there is not sufficient straw to carry a running fire, the next best method to deal with shoots is the fire rake. A fire rake, 30ft. to 40ft. in width, has several advantages over a smaller rake, because there are only special days in which one can burn stubble to kill shoots. The hotter the day the better. With a large rake one is able to move over the ground quickly at the best time, and the larger the fire the more heat it creates. When raking, the best plan is to keep the wind about half side on to rake. I have found the following method of working horses in a fire rake answer satisfactorily. Keep the horses the length of two plough chains away from rake. Do not make the work too burdensome for the team. Work slow horses, and ride a hack coupled on to the near side of the horses with a rein to the near and aft horse. A good method to adopt in burning shoots when there is no stubble is to log or roll the shoots, tie up every second tye of the fire rake, and run over the logged shoots. The idea is that some shoots when burning shall fall out as the rake is moving, and what remains in the rake will burn and not smother. In the matter of allowing the shoots to fall out, the operator can vary the pace of the horses—fast where the shoots are thick, and slow when the shoots are thin."

DESTROYING ANTS.—Mr. Davis asked a good method for destroying or getting rid of ant nests. He had tried poison and bi-sulphide of carbon without any good effect. Messrs. Kobelt and Noble advised the inquirer to cart a load of fine sand on to the top of the nests. The insects worked the sand down into the holes, which then blocked up and smothered the ants.

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**SPECIAL NOZZLE FOR BLOW-FLY PEST.**

## LIPSON.

February 3rd.—Present: 14 members.

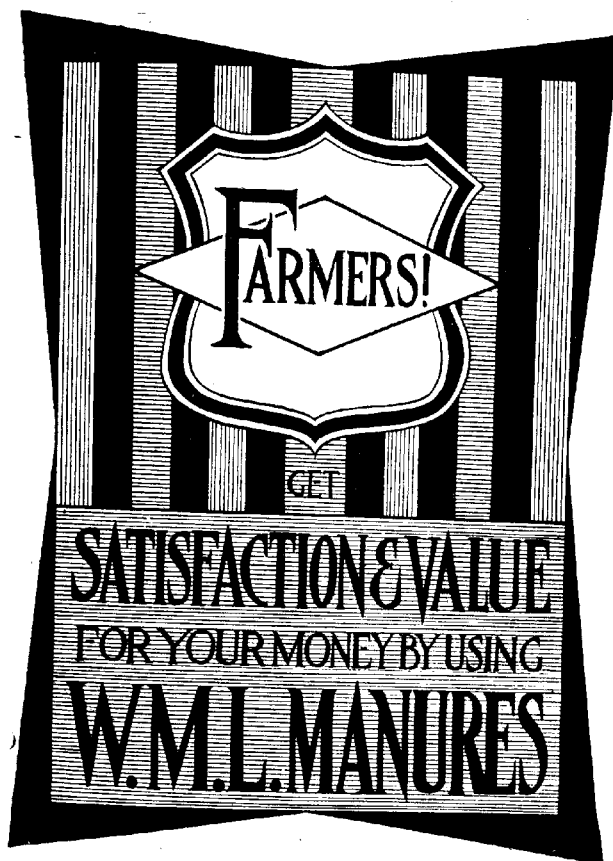
**SEEDING OPERATIONS.**—The following paper, under the title, "Seeding and Seedtime," was read by Mr. E. J. Barraud:—"No work in connection with farming is more important than seeding. It lays the foundation of either a good or indifferent crop. In dealing with this subject, it is assumed that the land has been fallowed and properly prepared for the seed. No variety of wheat can be said to be best suited to all kinds of soil. The predominating soils in this district are of a light loamy character. The light loam is warm land, and finishes early, so that it will be found advisable to sow suitable early wheats on this kind of land. Gluyas and several of the King's derivations of wheats are recommended, because on the light land these wheats mature quickly, and are not so inclined to lodge. A good mid-season variety should be sown on the heavier soils, which are more retentive of moisture, thereby giving the later wheats a chance to make a good finish. The mid-season varieties do well in the winter months, when sown on light soil, but in the spring they usually show signs of want of moisture, and often develop black rust. They also have a tendency to make an uneven growth of straw, with a percentage of small heads. If the spring is exceptionally dry, these wheats are likely to blight off, with the result that the yield will be diminished, and if grubs are present they show a distinct preference for the short blighted plant, climbing on to the head and eating a hole in the chaff, thus causing a shelling of the grain. The seed should be well cleaned, and, if possible, a farmer should change his seed every few years. Not necessarily the variety, with which he may be well satisfied, but grain should be secured from another locality. It is unwise to sow wheat that contains foreign seed; the farmer should endeavor at all times to sow clean seed. There are many methods of pickling wheat. The method, however, that I prefer is that done on a floor with bluestone. During the autumn the seed should be winnowed or graded, and before being re-bagged it should be pickled, and put away in readiness for seeding. Care, however, should be taken not to bag the wheat when it is too damp, in case it should mould and the germination be destroyed. In my opinion the best period to sow wheat in this district is from May 15th to June 15th, providing weather conditions are favorable. A farmer should sow about an equal area of early and mid-season wheats: a bushel to the acre of the former variety and three-quarters of a bushel of the latter, sowing the mid-season wheat in May and the early varieties in the June period. A problem occurs when rain fails to come in time to start the weeds, so that they may be destroyed before the grain is sown. If rain is so late that farmers are compelled to sow as soon as the rain comes, much good can be done in destroying weeds by harrowing the land well, just as the wheat is showing through the ground. The harrows will not hurt the young wheat plant, and by that time, in most old land, crowds of young weeds will be springing up, and the harrows will kill quite a lot of them, and give the wheat a chance to make headway. Although sheep are very useful agents in destroying weeds, it is a fatal mistake to depend too much on this means of cleaning the fallows. While the weeds are green it is a good plan to feed them down low with sheep, and before they start to run to seed the land should be well worked with a cultivator, with points wide enough to destroy all the rubbish. My experience has proved that when sheep are relied on wholly to clean fallow they have totally failed; in fact, when such weeds as wild turnip, mustard, and sheep weed, &c., commence to ripen, sheep only prove a means of propagation. Sheep and the liberal use of a good cultivator are the best-known means of eradicating weeds. I am convinced that if we paid more attention to the following points—destruction of weeds before sowing, time of sowing, best varieties of wheat to sow, depth of seeding, and weather conditions when sowing—we would grow a better average yield of wheat than we have done in the past."

## LIPSON.

March 3rd.—Present: 11 members.

**PREPARATION FOR DRY SEASONS.**—In the course of a paper dealing with this subject, Mr. W. Brown said the majority of farmers in that district only received a good hay cut once in about every four years, hence ample provision should be

made for reserve fodder supplies. Sufficient hay should be cut to tide over at least a period of two years. A most important point in the conservation of the hay was the erecting of weather-proof stacks. The centre of the stack should be kept well above the walls so that an allowance would be made for the sheaves settling down. Each sheaf should be so placed with the round side downwards, care being taken to see that it overlapped the twine on the sheaf upon which it was laid. There was no doubt that the harvester and reaper thrasher were great labor saving machines, but he thought it was a good plan to reap portion of the crop with a stripper, so that a supply of cocky chaff could be conserved. If a good stubble paddock was available, he suggested binding some of the straw and covering the chaff with straw. Care should be taken not to overlook the danger of overstocking the holdings, and the farmer should dispose of all surplus horses, cattle, and sheep. A keen discussion ensued.



## MALTEE.

February 2nd.—Present: 12 members and visitors.

**HARVEST REPORTS.**—Mr. E. D. Barnett said that his harvest was very disappointing, although at one time the prospects of a good return were excellent, late frosts in conjunction with a dry spring being the cause of light returns. The best crop came from fallow that was ploughed late in October. Mr. Martin stated that he had both fallow and unfallow land under crop, and, according to promise, his returns should have been good, but owing to frosts and dry weather the returns were disappointing. The best crop was grown on new land. Mr. Edson stated that he had both new and stubble land under crop. The average yield was good when one considered the conditions of the season. Different areas of new land were drilled with and without super. That without super gave the best return. The experience of other members was similar, the light returns being attributed to the damage caused by frosts.

**SUPER ON NEW LAND.**—A discussion took place on this subject. Mr. Wheaton mentioned that one of his neighbors, in drilling new land, sowed different plots with heavy and medium dressings of super. One plot was also sown without super. In the resulting crop, that land on which the heavier dressing of super was used gave very marked indications of the best return.

**QUANTITIES OF SUPER.**—Mr. C. G. Schwarz said that he sowed some of his crop on fallow with 80lbs. super, and the balance with 40lbs. The best returns were secured from the lighter dressing, but as the heavier dressing was sown much later he thought that would be the reason for the returns being lighter. Take-all was very prevalent in some of his crop, but where the heavier dressing of super was used less take-all was observed. The Hon. Secretary (Mr. J. B. Talbot) reported the presence of take-all, even though the piece of land in question had been burnt clear of stubble and also well worked. No super was used. Two years ago Mr. Bassham crossed drilled a piece of land with super, and cropped the same land twice. The land so treated had grown his best crop.

**THICK v. THIN SOWING.**—In reply to a question, Mr. Schwarz said that a thick sowing gave him the best return during the recent harvest. The Hon. Secretary (Mr. J. B. Talbot) was of the opinion that three-quarters of a bushel of seed to the acre was ample for average land if it was clean, but if the land carried a fair coat of grass more seed should be used.

## MALTEE.

March 2nd.—Present: six members and two visitors.

**SEEDING OPERATIONS.**—The Chairman (Mr. J. O. Shoone), in opening a discussion on this subject, stated that he had a fair area of ploughed land, and asked members whether it would be advisable to sow the seed whilst the land was in a dry condition, or wait for rain and then work the land before drilling. Mr. L. Martin thought that if the rain held off for a long time it would be best to give the land a light working. Mr. R. Edson was of the opinion that it would be quite safe to drill in the seed if the land was not too dirty. The Hon. Secretary (Mr. J. B. Talbot) inquired whether a good harrowing after rain would make a good job and kill the weeds. Members thought that the harrows would not kill grass, the general opinion being that the cultivator was the best implement for that class of work. The Hon. Secretary said that a lot of the prickly weed, locally known as "wolga," was growing on his fallow, and asked what members thought the best way to deal with the weed. Members considered that the harrows would do a good job provided there were no other weeds growing on the fallow.

**MILTALIE** (Average annual rainfall, 14.55in.).

March 3rd.—Present: eight members and visitors.

**CARE OF HORSES.**—"Sore shoulders is a common complaint of horses, but I am of the opinion that the trouble can be overcome to a certain extent," said Mr. T. J. McEachen in the course of a paper, dealing with the above subject. Continuing, the speaker expressed the view that the prevalence of sore shoulders was

due, in many cases, to the teamster asking five horses to do the work of seven. Another factor that had an important bearing on the subject was the feeding. The food should be of good quality; bran and crushed oats with wheaten hay. The hay should be cut before the crop became too ripe. The speaker deprecated the practice of putting on the hames and the collar in one operation, and considered a leather lined pipe collar the most satisfactory for the horses. Regular hours for feeding and watering should be observed, and he considered that eight to nine hours should represent the maximum period that the team should be asked to spend in the field. The horses should be tied up during the day feeds, to ensure each animal getting a fair share of the chaff, but at night he thought it advisable to allow them to remain loose, to enable them to rest properly and to give them a chance to escape in the event of an outbreak of fire. In the discussion that ensued Mr. D. P. Bagnell thought the secret of keeping horses' shoulders right was to pay close attention to collars and to see that horses did not get too much corn in the feed. He believed it was a good practice to wash the shoulders of young horses with cold water and salt after work. Mr. A. M. Wilson believed in brushing the shoulders well, and to be careful not to give too much corn in the feed. Mr. J. C. Story was not in favor of working more horses than were really necessary, because, apart from other costs, feed for the extra horses in a team would make up unnecessary expense. He thought it was a good plan to feed bran to working horses. Mr. W. G. Smith supported the first speaker in the use of cold water and salt to harden the shoulders. In reply to a question—"Is there anything that can be added to phosphorised pollard baits to make them more attractive to rabbits?" one of the members stated the prepared phosphorus was the most convenient to use and was prepared to be attractive to rabbits, but some members preferred to add brown sugar, which had the effect of freshening up the baits on dewey nights. A sample of Hubam clover was tabled, showing splendid growth, measuring 6ft. in height.

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## MOUNT HOPE.

March 17th.—Present: nine members.

The Hon. Secretary (Mr. H. F. Myers) read a paper, "The Boy on the Farm," that had been contributed by Mr. G. A. Vigar, and in the discussion that followed Mr. W. Mahoney thought the boy should be given some interest in the farm where he could make a little money instead of making a practice of giving him pocket money. Mr. J. J. Mahoney thought it a mistake to allow the boy to know the state of his father's financial affairs. Mr. T. Speed thought a boy should be sent out to earn his own money for some little time and keep himself, so that he would realize the value of money. Mr. R. L. Myers tabled a sample of Sudan grass grown at Lake Wangary. He informed members that the crop had been grown under very unfavorable and dry conditions. The sample was from the second cut, and was about 4ft. 6in. high, representing about five weeks' growth.

## PYGERY.

March 3rd.—Present: six members.

SEEDING OPERATIONS.—Mr. E. N. Heath contributed a paper on this subject. He recommended ploughing to a depth of 2in. when the soil was in a moist condition. A set of heavy harrows should then be used before the drill. He would sow at least a bushel of wheat to the acre with a dressing of 85lbs. of super. A light set of harrows should then be used. That would give the ground a good surface, but would not interfere with the seed. A good discussion followed the reading of the paper.

## SMOKY BAY.

February 24th.—Present: 14 members.

LARGE v. SMALL IMPLEMENTS.—Mr. F. Gregor, in the course of a paper on the above subject, recommended large implements. He considered that a stripper from an 8ft. cut upwards should be used; however, if the crop warranted such a wide cut, a reaper-thresher was preferable. With the use of large harvesting implements the farmer was able to make an early finish of the harvest, so that more time could be devoted to the clearing of stumps and stones before seeding, because rough ground was responsible for considerable wear and tear of the large implement. During seeding time a large plough and drill were advisable, in order that the seeding could be finished as early as possible, and so give the crop a lengthy growing season. For doing light work he recommended not less than a 9ft. cultivator. With the aid of large implements the farmer was able to do the farm work quickly, which in itself was a saving. In addition, the producer was able to do without the services of the casual laborer, who was almost indispensable where small implements were used. Mr. E. Lovelock reported having secured the following yields from hand plots, each being from a quarter to half an acre in area:—Late Glynas, yield per acre, 18bush. 57lbs.; Felix, 18bush. 50lbs.; Sultan, 17bush. 43lbs.; Dark Farrar, 16bush. 8lbs.; Currawa, 15bush. 45lbs.; Federation, 15bush. 37lbs.; Gallipoli, 14bush. 10lbs. The plots were affected with frost, which reduced the yield to a considerable extent.

BUTLER, March 5th.—Short addresses on the subject "Rabbit Destruction" were delivered by Messrs. A. Pfitzner, D. Butler, and R. Parker. All members agreed to lay poison on March 12th, thereby making a co-operative effort to keep the pest in check.

COLLIE, March 3rd.—Mr. D. W. Gunn read a paper, "Erecting Windmills." An interesting discussion followed, in which Mr. Gunn replied to numerous questions.

LAKE WANGARY, March 3rd.—Mr. W. A. Shepherd read an article "Sheep Breeding," and the meeting favorably discussed the proposal of the Advisory Board to institute crop competitions.

YEELANNA, March 3rd.—The first meeting of the new year was devoted to a discussion on the subject, "Treatment of Seed Wheat to Prevent Smut." A keen discussion was aroused, the majority of members expressing a preference for the bluestone treatment.

### EASTERN DISTRICT.

(EAST OF MOUNT LOFTY RANGES.)

LAMEROO (Average annual rainfall, 16.53in.).

March 3rd.—Present: 17 members.

THE MOTOR TRACTOR ON THE FARM.—The following paper was contributed by Mr. L. E. Crispe:—"The advent of the agricultural tractor has raised the question as to whether it will displace the horse in agricultural operations. Mechanical science has unquestionably produced in the tractor an efficient time and labor saving implement, which bids fair to quite revolutionize the laborious work on the farm and enable a very much greater area of land to be brought under cultivation. Hitherto all hard work on the farm has been done by horses, and in many cases to properly cultivate a large area and garner the harvest a

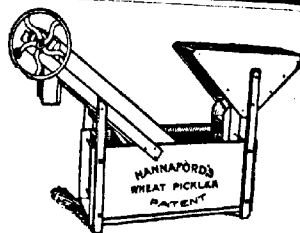
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large number of horses have had to be kept. The initial outlay in horse flesh is considerable, the feeding and maintenance are costly, the labor and time involved in cleaning, feeding, and resting are a big item, and the limitation of horse power is the most serious drawback. But with the coming of the tractor all these things have been changed, the initial outlay is very little heavier than that of an efficient and adequate team of horses, the maintenance of the tractor is almost a negligible quantity, there is no wasted time in resting, grooming, watering, and feeding. Then again, its working capacity is unlimited, for it is ready to take the field at a moment's notice, it needs no lengthy spell, it does not weary as does the horse, and it calls for no maintenance when not in actual use. The tractor works better, more quickly, evenly, and regularly than a team of horses, and for this reason can cope with a greatly increased area at much lower expense. When it is necessary to hasten work in accordance with seasonal or climatic conditions, this is a most important consideration. Heavy rain interrupts many field operations, and if, by the aid of the tractor, these operations can be completed before the rain comes, how much further advanced is the work? In the early days of the farm tractor, pessimists forecasted all kinds of evil effects on soils and crops as a result of tractor cultivation. These supposed evils, it was prophesied, would be cumulative and permanent, and the farmer who sought to reduce his production costs by the use of the tractor was, in the eyes of the critics, courting positive disaster. But where are those critics to-day, and how have their prophecies been fulfilled? As a matter of fact, the tractor has brought none of the evils mentioned in the pessimistic forecasts; indeed, the reverse has in many cases been the result. The tractor has been tried and has triumphed. If any instances existed of the harmful effects on the soil or crops by the use of the tractor, they would have been brought into prominence long ago. Indeed, it is no exaggeration to say that the use of the tractor on the farm has been beneficial to the crops, for by the very fact that the land can be prepared more rapidly by the tractor, the land receives equal climatic treatment, and the resultant crops are therefore more uniform in size, stamina, and quality. In my opinion, the best indication of the manner in which Australian farmers are recognising the practical nature of the farm tractor is the enormous sales that have been made during the past year, and the increasing inquiries for demonstrations. At the three Royal Shows, Adelaide, Melbourne, and Sydney, the business transacted in tractors was stupendous, and there is every reason to believe from that that the farmer is now firmly convinced that the tractor is one of the principal means by which he can reduce his production costs, and thus get either a bigger profit out of high prices or avert loss when prices fall. In this district, where the soil is principally of a light and sandy nature, the question arises: 'What type of tractor is most suitable?' As there are several types on the market, it would take some time to fully answer that question, so I will deal with my choice of type, which is technically known as the 'Rail-track tread.' For a tractor to travel over all kinds of roads it is necessary that it lay down its own track in many instances. Therefore some means of presenting a large surface to the ground must be provided, on which the weight may be supported, to prevent sinking into soft soil, and this is where the 'rail-track tread' comes into being. The point arrived at is to insure that the entire weight of the tractor shall be evenly supported by a number of small track wheels running on an endless chain, thereby presenting a very large gripping surface to the ground. There are several makes of this design on the market—American and European—and they all seem to be giving satisfaction in sandy country. In conclusion, I would like to put before you some facts and figures in connection with my tractor. I find that for a full day's work—that is, the equivalent to an eight-horse team, the fuel consumption is on an average 8galls. per day of low-grade kerosine and about a cupful of petrol for starting purposes. Oil and grease run into a daily cost of about 3s. 6d., therefore with kerosine at 12s. per case, the daily expenditure is, roughly, 16s. A full day's ploughing with a six-furrow following plough results in about 12 acres, thereby making the actual cost per acre for fuel about 1s. 6d. This tractor can be placed on a par with most of the standard makes for fuel consumption, so, therefore, I think these figures will more than favorably compare with the upkeep of an eight-horse team."

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(Late of Federal Taxation Dept.).

## MARAMA.

March 15th.—Present: 11 members.

**STUMPS ON THE MALLEE FARM.**—In the course of a short paper dealing with this subject, Mr. A. C. Greig suggested that the farmer, in clearing the stumps off his holding, should cart them to a stacking block at the siding, so that when the price reached a good figure the trucks could be loaded without any delay. He was of the opinion that the stumps could be turned to profitable account at 10s. per ton, providing one was not more than three miles away from the station, and could cart three tons with a team of eight horses. An excellent discussion followed.

## NETHERTON.

March 2nd.

**MALLEE FARMING EXPERIENCES.**—In the course of a paper dealing with this subject Mr. R. L. Cattle first made reference to the usual methods adopted for clearing the land and sowing the crop. After the crop had been taken off, the speaker considered the best practice to adopt was to burn the stubble of the first crop grown on new land, and crop the same paddock three years in succession—twice with wheat, and the third year with oats. It was important that the stubble should be burned every year. All side lines paid when they were managed well and given careful attention. Milk cows required hand feeding in addition to the natural grasses to secure the best results. Regular and careful and quiet handling played an important part in making milch cows a profitable side line. Fowls were another very important side line. He favored the White Leghorn for egg production. The birds should be given plenty of feed, both grain and grass, and a scratching pen should be provided. A supply of clean water, shaded from the sun, was also necessary. Other points that required attention were the provision of shelter from wind and sun, good places for dust baths, and clean perches and roosting places, and a periodical introduction of fresh blood by obtaining cockerels from breeders of birds of proved laying strains. Sheep were most essential, and helped to sweeten and fertilise the soil, they also kept the weeds down, and provided meat for household requirements. The farmer in the mallee, however, should first be sure that the paddocks were free from mallee shoots before the introduction of sheep. The horses were the main stay of the farm, and they should always receive proper attention. He favored a heavy class of horse for farm work.

**BERRI.**—On February 26th Mr. H. S. Taylor, of the Renmark Branch, gave an interesting account of his recent trip through the irrigation settlements of Victoria, to a good attendance of members and visitors.

**GERANIUM,** March 3rd.—An interesting evening was spent in discussing the returns of the past harvest. The matter of "Crop Competition" was also brought before the meeting.

**LAMEROO,** February 3rd.—**HARVEST REPORTS.**—Members brought forward their harvest results, which were highly satisfactory. They also quoted different methods of working their farms. The consensus of opinion was that well-worked fallow gave the best results. Fallow on some farms returned as high as 26bush. to the acre, whereas grassland ploughed and sown with the same amount of seed and super averaged only 9bush. per acre on the same farm. All members were of the opinion that the heavier dressings of super paid the best, especially on sandy soil. Some of the wheats which yielded good returns were Currawa, Caliph Federation, Gluyas, and Yandilla King.

**MONARTO SOUTH,** March 3rd.—Mr. A. Forbes delivered an interesting address, in which he contrasted the farming practices of the pioneers with those of the present day.

**WILKAWATT,** March 3rd.—After being in recess for the harvesting period the Branch met to discuss the proposed inauguration of crop competitions. All members heartily supported the scheme, and expressed a willingness to co-operate with other Branches for the purpose of making the scheme a success.

WYNARKA, March 17th.—Several subjects, including "Take-all," Smut," "Sorrell," and "The Use of High-grade Supers," were brought forward and a keen discussion ensued. Matters in connection with the proposed crop competitions were also discussed.

YOUNGHUSBAND, March 1st.—Mr. G. Hallett introduced the subject, "Destruction of Bird Pests," and a keen and interesting discussion followed.

## SOUTH AND HILLS DISTRICT.

### ALDINGA.

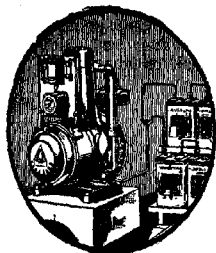
February 28th.

THE RIGHT STAGE AT WHICH TO CUT HAY.—Mr. M. G. Culley, who contributed a paper dealing with this subject, first referred to wheat hay, which he considered should be cut when the grain in the head of wheat could be felt to be "firming off" when pressed between the thumb and finger. Hay cut at that stage would be of a good color, and would contain a good show of grain. The oat crop should not be cut too green, yet, on the other hand, one should be careful to avoid binding when the crop was fully ripe; the main object should be to obtain hay that would make chaff of a good color.

### BLACKHEATH.

March 2nd.—Present: seven members and one visitor.

CARE AND MANAGEMENT OF THE FRUIT GARDEN.—Mr. J. Pym contributed a short paper on this subject. Before laying out the garden a suitable situation should be selected, special consideration being given to the type of soil. The prospective gardener should choose varieties of fruit trees that would bring in the most revenue in future years. It was not a good plan to plant too many varieties of either apples or pears, but a selection should be made of a few kinds that would bring the highest prices in the local and overseas markets. The young trees should be planted from 18ft. to 20ft. apart in land that had been properly prepared. Care should be taken to direct the strong roots towards the west in order that the tree could better withstand the heavy gales of wind that came from that direction. No manure should be placed near the roots of the young trees during the first year, and if summer rains were scarce,



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they should be watered frequently. The trees should be pruned and brought into proper shape during the first three years, and on no account should they be allowed to fruit too heavily, because that retarded growth and the trees would become stunted. The grower's aim should be quality, not quantity, and that could greatly be assisted by the practice of correct pruning. Fruit trees needed a certain amount of manure every few years to keep them healthy and vigorous. When a tree became stunted through excessive wet, over-cropping, or impoverished soil, it could be restored by a little attention. Bone-dust or stable manure should be worked into the land, the tree heavily pruned, and the fruit spurs thinned out. All insect and fungus pests should be eradicated with sprays, &c. He thought the starling was one of the greatest bird pests in that district, and it was a difficult matter to find a successful remedy for them; he had tried poisoned water in small troughs, and weak rabbit traps with apple bait, but with little success.

#### CURRENCY CREEK.

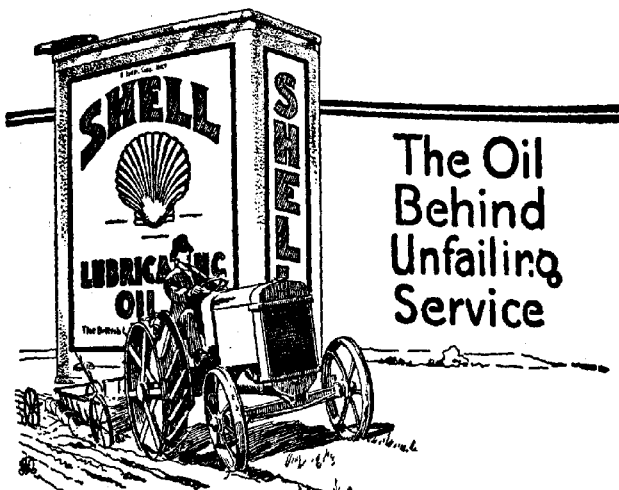
March 5th.—Present: 15 members.

GENERAL FARMING PRACTICES.—Mr. P. J. Henley, who contributed a short paper dealing with this subject, said on the majority of farms in the Currency Creek district mixed farming practices were adopted. To secure maximum returns, it was necessary that the land should be thoroughly cultivated, receive liberal dressings of manure, and it was also important to adopt a system of rotation of crops. He considered it a good plan to sow a crop of peas, followed by wheat, and then oats. In addition to the cereal growing the importance of side lines, such as pigs, cows, and poultry should not be overlooked, for with the provision of suitable fodder crops they would assist in increasing the revenue from the holdings. The speaker considered Sudan grass to be one of the best fodder grasses for the district. Lucerne was also recommended for those farmers who were in a position to irrigate. In the discussion that followed Mr. P. H. Plummer asked if Sudan grass would not do better if sown in small plots on heavy land. The writer of the paper thought it would do better in smaller plots, but thought that it would not pay to plant it on heavy land unless the land was well worked. Mr. G. Ritchie had found Sudan grass an excellent stock-fattening fodder, and was of the opinion that it would pay better to put it in on heavier land than was the custom in their district. Mr. H. Bastian thought that Sudan grass was better for milking cows than lucerne. Mr. Ritchie considered that the main advantage in sowing Sudan grass was the fact that it made splendid growth without irrigation. Mr. Kilsby suggested sowing about 8lbs. of seed with 20lbs. to 30lbs. of super to the acre on sandy soil. Mr. Plummer stated that mangolds were the best fodder crop. Mr. Kilsby said sugar beet was better than mangolds, and gave his returns from five acres of each. The sugar beet had fattened 150 sheep and had yielded 22 tons, the mangolds had fattened 50 sheep and had returned eight tons, while five acres of turnips harvested 16 tons. The difference in the sheep at weighing periods was 6lbs. to 7lbs. gained on beet and only 2lbs. to 3lbs. on the mangolds. He had found that French seed was better than Russian. Referring to the top dressing of pastures, Mr. Bastian said he had tried it during the past season, and was certain it was a paying proposition. Mr. Kilsby told members that stock preferred grass from land which had been top dressed with super, and was sure the practice paid on heavy land.

#### LONGWOOD (Average annual rainfall, 37in. to 38in.).

March 3rd.—Present: nine members and visitors.

HOMESTEAD MEETING.—The monthly meeting of the Branch was held at the residence of Mr. W. H. Hughes. Mr. Roebuck gave a report of an interesting trip that he, in company with several members of the Longwood and Balhannah Branches of the Agricultural Bureau, had paid to the Tweedvale Woollen Mills on December 12th. The Hon. Secretary (Mr. J. E. Coles) also gave a report of a visit to the Blackwood Experimental Orchard on February 17th.



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McGILLIVRAY (Average annual rainfall, 19in. to 20in.).  
February 27th.—Present: nine members and visitors.

THE BENEFITS DERIVED FROM MEMBERSHIP OF THE AGRICULTURAL BUREAU.—The following paper was read by the Hon. Secretary (Mr. H. J. Wiadrowski):—  
“There should be absolutely no need to draw the attention of settlers to the advantages gained by being a member of the Agricultural Bureau, because they are so obvious. Unfortunately, however, in some districts, settlers seem to be either ignorant or indifferent as to these advantages, and think the time spent at Bureau meetings is wasted. Considering that settlers are all interested in the same vocation—primary production of one sort or another—it must be to their mutual benefit to meet occasionally and discuss subjects in connection with their occupation. The exchange of ideas as to how, why, and when different operations should be carried out, and the discussion of the various practices enable members to benefit considerably from the results of each other's experiments. Formerly a lot of farmers were under the impression that a lot of agricultural problems could be solved by the chemist in his laboratory as regards what was necessary as plant food for producing grain and straw, and by soil analysis to learn what the soil contained in this respect and what was deficient. The regular meetings of a body of farmers will often enable one farmer to avoid failure and obtain practical knowledge and advice that he otherwise would spend considerable time and money to obtain. In many districts where there is no literary or mutual improvement society, it is a great help to younger members to take an active part both in writing papers and in the general discussion on papers read, because this gives them practice in public speaking, which they will often find useful. Some members seem rather reluctant in writing papers for discussion at a meeting, but this should not be, as it is not the way a paper is written or worded that matters, but the ideas expressed, and the actual paper is not so valuable as the discussion which follows. The paper, however good, only expresses the ideas of the writer, whereas, in the discussion, the ideas of all the members are heard. In larger and closely settled districts the benefits derived from being a member of a Branch are very considerable, because a more varied range of ideas would be expressed in the discussion, but even in this district it is worth carrying on, and the time spent at meetings is time well spent. There is also the social side of the question, which must also be considered. It is to the advantage of the residents of any district, more so an isolated one, such as this, to cater for the social life of the residents, especially in the case of the young folk. Apart from these reasons each member is under an obligation and has a duty to perform to his neighbor and the district. If the majority of settlers in isolated districts do not attend the meeting it cannot be successful. The meetings are held for the benefit of the district, and if settlers make a practice of not attending they are not doing their duty to the district, and are not studying their own interests.”

MEADOWS (Average annual rainfall, 25.52in.).  
January 31st.—Present: nine members.

PRIVATE FORESTRY IN THE HUNDRED OF KUITPO.—The following paper was read by Mr. W. Durward (forester in charge of the Kuitpo Forest):—A great many of the farmers in the above hundred have an acre or two of land that is either too rough for cultivation, or too poorly grassed, or perhaps covered with ferns, rendering it practically useless to them, but if planted with *Pinus Insignis* it would return a good profit in 20 years. If the farmer planted an acre of *Insignis*, say spaced at 8ft. x 8ft.—680 trees to the acre, it would cost roughly £10 to plant and fence off, which would represent £1 per year up to 10 years, when he would receive about £10 net for his thinning, i.e., all forked or badly shaped trees, leaving all straight and healthy trees to be thinned again at 15 years old, for which he would receive another £15. At 20 years the balance of the crop would be worth about £175, and would increase in value as the years advanced. After the pines are planted ½lb. of wattle seed may be sown, because they assist as nurses, help to make a clean forest floor, and kill all undergrowth. The wattles will also produce revenue in about five years, and will grow very long and

straight if sown among pines. All stock should be kept out of the plantation for about three years, when sheep or calves may be grazed, and at seven years the plants will make excellent shade, and shelter for all stock. I am of the opinion that land in the district now covered with blackberries could be cleared by planting *Insignis* spaced at 6ft. x 6ft. *Broadcasting*.—Land that is low lying and wet during the winter months, and is usually covered with ti-tree, will grow excellent *Maritima* pines. All that is required is to cut the ti-tree down, and when it is dry burn it off, then plough and harrow the plot, fence it off from all stock, sow 1lb. of *Maritima* seed to the acre, and then harrow again. Sowing should be done in July or early in August, but the time may vary according to the season. The cost of carrying out the above operations would be approximately as follows:—Clearing, £1 5s.; cost of seed, 10s.; ploughing, 15s.; harrowing and sowing, 15s.; total cost, £3 5s., plus cost of erecting fence, which would vary according to the class of fence erected."

A further meeting was held on February 28th, when Mr. Nottage read an article, "Rabbit Destruction." Members were of the opinion that trapping was the most economical means of dealing with the pest. Some of the landholders had fumigated with good results.

#### RAPID BAY.

February 17th.—Present: 19 members.

POTATO GROWING.—The following paper was read by Mr. B. C. Willis:—"There are not many different varieties of potatoes, but for an early and quick-growing sort I recommend Up-to-Date or Scotch Triumph. Both are good eating and

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marketable varieties, because they have an even surface and full eyes; but for an all-round potato I favor Circular Head. It is one of the best marketable sorts in Australia, and keeps and carries well, whereas the white varieties bruise easily and start to shoot very soon after being taken from the ground. In selecting seed for planting, care should be taken to see that the sets have, or are likely to have, proper shoots, because in the white varieties there are many blind potatoes that never put forth shoots. For a frost-resisting potato I think it advisable to import seed from a cold climate, say, from England or Ireland. At planting, the ground, if possible, should be well worked and manured. Stable or ordinary yard manure is generally favored, and on swampy land a good dressing of seaweed is a splendid fertiliser. Experience has proved that, no matter how well the ground is prepared, and the potato crop cared for, if the season is not favorable the result will be a poor crop. Potatoes should be dug so soon as the vine or leaf begins to turn yellow; then the result is a clean potato, free from grubs or worms."

**WATTLE CULTURE.**—A further meeting was held on March 3rd, when the following paper under the above heading was contributed by Mr. A. G. Bennett:—"I am of the opinion that the wattle is worthy of more consideration than it receives at present, in the way of protection from fire, cleaning up the country to be planted, and fencing from stock for the first three years. In this district we have a fair proportion of country, that would give payable returns if devoted to wattle growing, seeing that it is possible to strip three tons of wattle bark to the acre, which will give an average of £5 per ton profit after paying all expenses. In preparing for planting it is necessary to scald the seed; otherwise it will germinate very irregularly, and so product poor results. It is not necessary to plough the ground for wattle planting. The trees will grow just as well on grass land as on cultivated land, providing the grass or scrub land is reasonably cleared of bush and green timber, and stock kept out of the paddock. Sow in April 12lbs. of seed on grass or scrub land, and 10lbs. with wheat, oats, or peas on cultivated land. The wattles will then be ready to strip in seven years, when they should be thinned out at the rate of 15cwts. to 1 ton per acre, and so finish the paddock in from 10 years to 11 years."

#### ROCKWOOD.

February 28th.—Present: 14 members.

**HOMESTEAD MEETING.**—In the afternoon a homestead meeting was held in Messrs. Neighbour's and Green's gardens. Mr. C. H. Beaumont (Orchard Instructor and Inspector) was in attendance. The first garden visited was Mr. L. Neighbour's, of which he gave particulars of when each plot was sown, &c. Diseases had been very prevalent, and some vegetables still carried the diseases. Mr. Beaumont detailed the causes of same and how to treat them. Members then moved on to Mr. H. Green's holding. Everything was looking well in the vegetable plots, and Mr. Beaumont again assisted by explaining causes of diseases, especially in the orchard. In the evening Mr. Beaumont addressed members on "Orchard Work." A good discussion followed, and numerous questions were asked.

**BLACKWOOD, March 19.**—Ten members and four visitors attended the monthly meeting, which was held at the Government Experimental Orchard, when the manager, Mr. R. Fowler, read a paper, "Tests and Experiments Carried Out at the Government Orchard."

**CHERRY GARDENS, February 27th.**—Mr. H. N. Lewis contributed a paper entitled "Fruit Drying at Mildura," and with the aid of a blackboard demonstrated the methods that were adopted in laying out an irrigation settlement.

**MOUNT BAKER, February 28th.**—Mr. A. H. Codrington (Wool Instructor of the School of Mines) attended the meeting and delivered an address, "Sheep and Sheep Breeding on the Farm," to a gathering of 32 members and several visitors.

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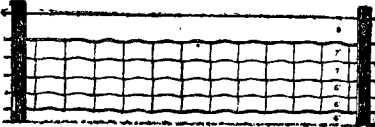


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PORT ELLIOT, February 17th.—The meeting favorably discussed the proposal of the Advisory Board of Agriculture to institute district crop competitions. Members also discussed the advisability of organised and concerted action to deal with rabbits, the pest having recently considerably increased.

SHOAL BAY, February 27th.—Mr. Buck read extracts from the *Journal of Agriculture*, "Sheep on the Farm" and "The Farmers' Income Tax Return," which resulted in an interesting discussion.

### SOUTH-EAST DISTRICT.

MOUNT GAMBIER (Average annual rainfall, 32in.).

February 10th.—Present: 20 members.

THE SUGAR BEET INDUSTRY.—The following paper was read by Mr. J. Livingston:—"The beet sugar industry is the practical result of the scientific cultivation and improvement of the beet plant. The United States was beset by exactly the same difficulties as we have to face, and blessed with very much the same climatic and soil conditions. Similar hesitancy in undertaking the establishment of the industry was exhibited there as now exists here. Method of Cultivation.—Although beets are grown on a variety of soils, it is advisable to select the best land, with a view to securing good yields. When the industry is thoroughly established, beets may be grown on poorer land, for the indirect advantage of improving such soils for other crops. The intense culture and deep-rooting habits associated with beet growing will undoubtedly—as in Europe—exert a valuable influence on the fertility and production of second-rate soils. Where convenient, the beet land should be deeply ploughed, or ploughed and subsoiled in the autumn up to 12in. and allowed to mellow during the winter. In the early spring the area should be surface cultivated or shallow ploughed and brought to a fine tilth, with a well-firmed soil and a fine seed-bed. Good preliminary cultivation is an essential step towards success and economy in growing the beet crop. Seeding should immediately follow the final cultivation in order that the weeds may have no advantage over the beet seed. A special four-row beet seed drill is used, with rows 18in. or 20in. apart. About 12lbs. of seed is sown per acre, because it is necessary to secure a rapid and strong germination. August plantings are considered early, September normal, October and November late. Thinning should be done soon after the first cultivation, while the beets are quite small. The space between each plant should be approximately 8in. in very rich soils, 10in. in good soils, and 12in. in medium or dry soils. Many thinners who become expert in the work do as much as half an acre and sometimes more per day. The term of beet harvesting usually extends from March to June. A special two-point lifter is used to lift the beets, or alternatively a single furrow plough stripped of its mould-board. The topping is done by contract at a fixed price a ton. The beet-toppers pull and shake the loosened beets and throw them into rows. Then, with large beet knives they slice off the crown and tops, throwing the roots clear of weeds. The carters fork the beets into drays, and haul them to factory or railway siding, as the case may be. The Victorian railways carry beet at a rate of 2s. a ton after the first 25 miles, and thus help to foster the industry. The By-products.—The by-products of the beet field—molasses and beet pulp—serve to enhance the value of the crop, and are a valuable adjunct to dairying and stock-raising. The leaves and tops are fed to stock, and so also is the pulp after the sugar is extracted. It is calculated that the value of the by-products for mere feeding purposes, is worth more an acre than the value of a wheat crop without reckoning the sugar content value of the roots. The world is turning more and more to beet for its sugar. The British Sugar Beet Association has begun operations in Nottinghamshire, and bases its expectations of success upon the fact that trial tillages of sugar beet in England have given a sugar content of 17.36 per cent. The sugar content of beet grown in Mount Gambier and Millicent was 18.7 per cent., which astonished the manager of the Maffra factory.

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the average figure at Maffra being only 15 per cent. Advantages of Beet.—Though the general advantages of beet culture are fairly well known, it may be interesting to have the following views of the Colorado farmers on the advantages of the sugar beet as compared with other crops:—(1) The price of sugar beet is known before the crop is planted. (2) It demands a better system of tillage than other crops, which ultimately raises the yield of all other subsequent crops. (3) The by-products—beet tops and molasses—are cheap and desirable feeds for stock, particularly in conjunction with lucerne. (4) Beet farming from the farmer's point of view means increased revenue directly from the beet and live stock, and indirectly from an increase in the yield of other crops. Scarcity of farm labor is less known in the beet-raising districts than anywhere else. (6) Beet-raising districts are able to support a denser population than those raising hay and grain. This makes for better living conditions in the country, better roads, and better schools. All the essentials for the successful cultivation of sugar beet are available in South Australia, Victoria, and Tasmania. This being so, what is there to prevent us engaging in the industry with results equal to those achieved in Colorado. Information from Maffra.—The following information from the manager of the Maffra factory was made available to Mr. Livingston by the Victorian Treasurer (Mr. W. M. McPherson):—The Steffens desugarising process is used in many factories and improves the per cent. extraction. The 1922-23 results are not yet available, but owing to the low rates ruling for sugar at planting period, the beet acreage and production substantially decreased. With improved sugar prices, it is expected that the acreage will be very satisfactory next season. About 2,300 acres have been planted for 1923. Recently the sugar beet industry in America has experienced a very severe test of endurance inasmuch as sugar prices soared to extreme rates during and after the war, and then suddenly dropped as low as 2d. per lb. at some of the factories, placing manufacturers and growers in a very precarious position. A financial crisis had to be faced, retrenchment and economy were rigidly applied, and it is a compliment to the industry that it has been able to survive the test. Although the acreage was naturally reduced, there is every indication that the firmer prices now prevailing for sugar will attract a good area of beet for next season, and find the industry wiser and stronger than ever. California has experienced great difficulty with beet pests and diseases. All other beet-growing States in America are in good shape, and particularly Colorado, where the production of beet sugar approaches 300,000 short tons. Mechanical efficiency, high speed, and good extractions are aimed at in the factories, and with great success. Many mills designed for 1,000 tons are now slicing over 1,500 tons per day, and with much improved efficiency. A 500-ton-per-day factory under present conditions of labor and material costs is considered the minimum unit, yet this is probably quite large enough for the first venture in a new country. A small mill with moderate capital and a full turnover is likely to prove more successful than too large a factory, heavily capitalised, and not fully supplied with beets. Suitable for the South.—With some knowledge of America's experience, methods, and results, I consider the beet sugar industry very desirable and suitable for the southern States of Australia. Its direct and indirect advantages for a State desiring to develop its country interests are very great. A small area under beets profitably employs a large amount of labor, and yields high values in sugar and by-products. The experience of the Maffra sugar factory over an extended period has been a trying one, but results are now such as to warrant expansion, and, should results prove favorable, a further extension of the industry may reasonably be looked for. A site with good drainage, large water supply, and favorable transport conveniences is important. The factory should be centralised within an approved beet-growing area. Supplies of fuel and high-grade lime rock should be readily available at reasonable prices. Pulp drying and special treatment of the molasses might be deferred until the industry had become fairly established. Special beet-growing implements would be required. With a special knowledge of Australian conditions, I am of opinion 3d. per lb. sugar should be considered a safe price. In such case the distribution would be as follows:—To the grower, 1½d. per lb. of sugar; manufacturing costs, 1d. per lb. of sugar; overhead expenses and profit, ½d. per lb. of sugar; total, 3d. Guaranteed Area Necessary.—Under no consideration whatever should the construction of a factory be proceeded with until it is assured that the area under

consideration is capable of producing good yields of high-grade beets, and that the farmers are willing to grow a sufficient quantity from year to year. In other words, should a full supply of high-grade beets be available, the factory can be expected to take successful care of the manufacturing, but on a small or irregular supply of beets it cannot hope to succeed. Consequently the production of the beets may be placed as the most important consideration of all. The production of good crops involves a number of requirements. A rainfall equal to about 25in. per annum, with plenty of moisture available for the growing period, and comparatively dry conditions during the harvest period. Good, strong, deep, silty loams, with a good percentage of lime for preference. The rich barley lands in the South-East of South Australia appear suitable for beet-growing, but experimental crops will afford the most reliable information. Farmers must be willing to give the beet crops the best of cultivation and attention. Danish or other experienced beet-growers to stimulate others on right lines are very desirable. Laborers who are willing to undertake beet thinning, hoeing, and harvesting by contract are necessary. Rotation of crops should be encouraged from the start. About 5,000 acres would be required for a 600-ton mill, but it might be wise not to attempt a full acreage the first year, but allow growers to gain their experience on a smaller and safer acreage. A small area well cared for would be better for all parties than a full area, which, for want of experience over the critical periods, might get out of hand and cause loss and disappointment. Growers should make provision to profitably use the beet tops for fattening sheep and the beet pulp for dairying. I understand that the Government has already instituted inquiries into the beet sugar industry, and made fairly extensive beet growing experiments, which should be the basis upon which to determine the areas that are suitable for beet growing. Beets averaging 10 tons or more per acre and testing 15 per cent. of sugar, at purities from 80 to 85 per cent., would be satisfactory. The average rainfall at Maffra from 1911 to 1922 was 21.5in. I have pleasure in repeating that I consider the beet sugar industry very desirable for the southern States of Australia, but it can only hope to succeed if on the selected areas the growers can and will produce a full and regular supply."

Several fine stalks of maize—Ninety Day and Silver King varieties—were staged by Mr. A. A. Kilsby, Moorak. The maize had attained a height of over 8in., while the growth of Sudan grass exceeded 6ft. Mr. Kilsby stated both plots had been watered by means of a sprinkler, and the resultant crops proved the value of irrigation on local soil.

In advocating the use of the Lake Bonney shell grit, a sample of which was tabled, Mr. A. A. Sassanowsky said it would be of great value in that it would meet the deficiency of lime in our soils. Small applications were of little use,

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and he recommended that the dressing be not less than half a ton. On his land he proposed experimenting with three tons to the acre, and continuing until he discovered the correct quantity. It was necessary to conduct the tests over a number of years, since, though an improvement was noticed the first year, the full benefit was not apparent until the second season.

#### MOUNT GAMBIER (Average annual rainfall, 32in.).

March 10th.—Present: 20 members and visitors.

**THE SMALL BIRD PEST.**—The following paper was read by Mr. G. Preece:—“Sparrows and starlings do an immense amount of damage in the fields and gardens, and they are also very filthy birds about buildings, especially where rain water is used for domestic purposes. I believe that, if it could be arranged, or made compulsory, these birds could be checked to some extent by poisoning regularly, especially during that period of the year when grain and fruit are not plentiful. This period would extend from about April until the middle of November, although a few can poison at any time of the year, the result is not so good. I have obtained the best results from the use of phosphorus, but of late years it has been difficult to buy. I have also obtained good results from a phosphorus mixture. In reference to the getting of the poison, in all cases I favor scattering good grain a few times before setting down the poisoned grain. In seeding time I also find it beneficial to scatter some poisoned grain after the drill, or after the harrows. When fowls are running about we cannot always scatter poison under the trees and hedges about the homestead. In these cases I would recommend nailing up some shallow boxes, and adding a little chaff containing a fair amount of grain. On the second day a little more grain could be added, and on the third day put the poisoned grain into the chaff. During this week the starlings raided a pear tree in my garden. This tree was carrying a fairly heavy crop, and I could see that it would only be a few days before the starlings destroyed the lot. I picked all the pears off the top branches, and took half a dozen of the mature fruit. I drew a piece of string through each pear, poisoning some of them with arsenic, and the others with phosphorus mixture, and tied them up on the top branches of the tree. On looking the following day, I found the birds had taken the poisoned pears, and I noticed by the end of the week there were very few coming back.” Mr. J. H. Buck said a phosphorus mixture was an excellent poison for sparrows. He used it by scattering the grain after sowing, when it was noticed that the sparrows were following up the drill and taking the grain. On the morning following he had picked up a kerosine bucket of sparrows. Mr. W. D. Robinson opposed the wholesale destruction of starlings. He said these birds ate large numbers of grubs, which were very destructive to crops.

**THE WORKING HORSE.**—The following paper was read by Mr. J. Fletcher:—“Having selected the team, the horses should be put in a good stable, facing the east for preference. The stalls can be either 5ft. or 6ft. wide, according to the size of the horses, but do not have the divisions between the horses too long, because the animals like to get to the end of the rope and lie with their hindquarters clear of the stall. Feeding.—This is an item that is neglected by many farmers. As a rule a bag of chaff is simply emptied into the manger, and no difference is made between the big eater and the small eater, the fast eater and the slow one. It will then be said that a certain horse is a ‘bad doer,’ when the fault is with the system of feeding. Feeding on chaff alone is wasteful, and does not give the horse a chance to rest. It is not good to have the horse grinding its jaws all night to get a feed, when concentrates of the same value can be eaten in about half the time. In grooming, clean the horse all over right to the hoofs. By using plenty of the brush freely on the legs the circulation is assisted and it also helps to keep the horse in a sound condition. Have well-fitting harness, especially the collars. The collar should fit tightly on the sides of the neck. More sore shoulders are caused from collars that are too big than

## AGRICULTURAL PUBLICATIONS.

following publications have been issued and are available for distribution at prices mentioned:—

- "First Aid to the Horse," by F. E. Place, B.V.Sc., M.R.C.V.S., &c.; price, 3s.; posted, 3s. 2d.  
 "Fruit Tree and Grape Vine Pruning," by Geo. Quinn; price, 3s. 6d.; posted, 4s. 3d.  
 "Poultry Manual," by D. F. Laurie; price, 1s. 3d.; posted, 1s. 5d.  
 "Vinegrower's Manual," by A. Sutherland (1892); price, 6d.; posted, 7d.

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from those that are tight." In the discussion that followed the Chairman (Mr. W. Manser) said the feeding of the horse was a very important factor, and care should be taken that stale chaff was not left in the bottom of the manger. Mr. A. A. Sassanowsky touched on the watering of the horse. He said some people held that a horse should be watered before feeding, but in some instances a horse would not drink before he had been fed. He maintained that the better plan was to allow the horse to drink whenever it desired.

#### PENOLA (Average annual rainfall, 26.78in.).

March 3rd.—Present: six members.

Mr. S. Ockley read a paper, "Japanese Millet," and in the discussion that followed Mr. Adamson favored Sudan grass, but thought Japanese millet more suitable for grazing. Mr. Ockley, in answer to a question, said sheep could be put on the millet seven weeks after the germination of the seed. The paper was provocative of good discussion, and the opinion expressed was that Japanese millet was a splendid fodder plant. Mr. Ockley explained the method he adopted for poisoning rabbits with apples cut into cubes. Cut the apples into small cubes about  $\frac{1}{2}$  in. square. To make a trail, lash a mattock to a fairly heavy piece of wood behind a spring cart. One kerosine tin of apples was sufficient to treat a mile of furrow. Feed the rabbits once on unpoisoned apples, and use poisoned baits on the following night. Over the second layer of apples in the kerosine tin sprinkle powdered strychnine, to which has been added a little castor sugar and baking soda. At one-yard intervals put down the cut apples, and use one-third of an ounce of poison to half a kerosine tin of apples.

#### TATIARA (Average annual rainfall, 19in.).

March 16th.—Present: 11 members.

**BURNING OUT STUMPS.**—Mr. C. Campbell, who contributed a paper dealing with this subject, said he intended to relate an experience which he had had at the beginning of last winter. The paper then read as follows:—"A quantity of damp rotten straw that had been blown off one of the sheds was carted out into the paddock and heaped over a tough red gum stump, about 3ft. 6in. in diameter. The straw was lighted, and in three days the stump was burnt off to the level of the ground. In a fortnight the stump had been completely destroyed. Three more large and tough stumps were tried, and in each case the same success that had attended the first experiment was achieved." As a further assistance Mr. Campbell suggested that the earth should be grubbed away from the roots to enable the fire to take a good hold on to the timber. An interesting discussion followed.

**ALLANDALE, March 3rd.**—The first meeting of the Allandale Branch of the Agricultural Bureau was held in the local hall, when the officers were elected for the ensuing term.

**KALANGADOO, March 10th.**—An interesting discussion took place on the subject, "Sudan Grass." Matters in connection with the forthcoming Conference of South-Eastern Branches, to be held at Kalangadoo on May 2nd, were also brought before the meeting.

**KONGORONG, March 1st.**—Members discussed the proposal to inaugurate crop competitions, the general opinion being that the district would be better served with experimental plots. Matters relating to stock troubles were also brought before the meeting.

